

PD SF

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THE GREAT FOREST

from *After London*, by Richard Jefferies
<http://www.gutenberg.org/ebooks/13944>

The old men say their fathers told them that soon after the fields were left to themselves a change began to be visible. It became green everywhere in the first spring, after London ended, so that all the country looked alike.

The meadows were green, and so was the rising wheat which had been sown, but which neither had nor would receive any further care. Such arable fields as had not been sown, but where the last stubble had been ploughed up, were overrun with couch-grass, and where the short stubble had not been ploughed, the weeds hid it. So that there was no place which was not more or less green; the footpaths were the greenest of all, for such is the nature of grass where it has once been trodden on, and by-and-by, as the summer came on, the former roads were thinly covered with the grass that had spread out from the margin.

In the autumn, as the meadows were not mown, the grass withered as it stood, falling this way and that, as the wind had blown it; the seeds dropped, and the bennets became a greyish-white, or, where the docks and sorrel were thick, a brownish-red. The wheat, after it had ripened, there being no one to reap it, also remained standing, and was eaten by clouds of sparrows, rooks, and pigeons, which flocked to it and were undisturbed, feasting at their pleasure. As the winter came on, the crops were beaten down by the storms, soaked with rain, and trodden upon by herds of animals.

Next summer the prostrate straw of the preceding year was concealed by the young green wheat and barley that sprang up from the grain sown by dropping from the ears, and by quantities of docks, thistles, oxeye daisies, and similar plants. This matted mass grew up through the bleached straw. Charlock, too, hid the rotting roots in the fields under a blaze of yellow flower. The young spring meadow-grass could scarcely push its way up through the long dead grass and bennets of the year previous, but docks and thistles, sorrel, wild carrots, and nettles, found no such difficulty.

Footpaths were concealed by the second year, but roads could be traced, though as green as the sward, and were still the best for walking, because the tangled wheat and weeds, and, in the meadows, the long grass, caught the feet of those who tried to pass through. Year by year the original crops of wheat, barley, oats, and beans asserted their presence by shooting up, but in gradually diminished force, as nettles and coarser plants, such as the wild parsnips, spread out into the fields from the ditches and choked them.

Aquatic grasses from the furrows and water-carriers extended in the meadows, and, with the rushes, helped to destroy or take the place of the former sweet herbage. Meanwhile, the brambles, which grew very fast, had pushed forward their prickly runners farther and farther from the hedges till they had now reached ten or fifteen yards. The briars had followed, and the hedges had widened to three or four times their first breadth, the fields being equally contracted. Starting from all sides at once, these brambles and briars in the course of about twenty years met in the centre of the largest fields.

Hawthorn bushes sprang up among them, and, protected by the briars and thorns from grazing animals, the suckers of elm-trees rose and flourished. Sapling ashes, oaks, sycamores, and horse-chestnuts, lifted their heads. Of old time the cattle would have eaten off the seed leaves with the grass so soon as they were out of the ground, but now most of the acorns that were dropped by birds, and the keys that were wafted by the wind, twirling as they floated, took root and grew into trees. By this time the brambles and briars had choked up and blocked the former roads, which were as impassable as the fields.

No fields, indeed, remained, for where the ground was dry, the thorns, briars, brambles, and saplings already mentioned filled the space, and these thickets and the young trees had converted most part of the country into an immense forest. Where the ground was naturally moist, and the drains had become choked with willow roots, which, when confined in tubes, grow into a mass like the brush of a fox, sedges and flags and rushes covered it. Thorn bushes were there, too, but not so tall; they were hung with lichen. Besides the flags and reeds, vast quantities of the tallest cow-parsnips or "gicks" rose five or six feet high, and the willow herb with its stout stem, almost as woody as a shrub, filled every approach.

By the thirtieth year there was not one single open place, the hills only excepted, where a man could walk, unless he followed the tracks of wild creatures or cut himself a path. The ditches, of course, had long since become full of leaves and dead branches, so that the water which should have run off down them stagnated, and presently spread out into the hollow places and by the corner of what had once been fields, forming marshes where the horsetails, flags, and sedges hid the water.

As no care was taken with the brooks, the hatches upon them gradually rotted, and the force of the winter rains carried away the weak timbers, flooding the lower grounds, which became swamps of larger size. The dams, too, were drilled by water-rats, and the streams percolating through, slowly increased the size of these tunnels till the structure burst, and the current swept on and added to the floods below. Mill-dams stood longer, but, as the ponds silted up, the current flowed round and even through the mill-houses, which, going by degrees to ruin, were in some cases undermined till they fell.

Everywhere the lower lands adjacent to the streams had become marshes, some of them extending for miles in a winding line, and occasionally spreading out to a mile in breadth. This was particularly the case where brooks and streams of some volume joined the rivers, which were also blocked and obstructed in their turn, and the two, overflowing, covered the country around; for the rivers brought down trees and branches, timbers floated from the shore, and all kinds of similar materials, which grounded in the shallows or caught against snags, and formed huge

piles where there had been weirs.

Sometimes, after great rains, these piles swept away the timbers of the weir, driven by the irresistible power of the water, and then in its course the flood, carrying the balks before it like battering rams, cracked and split the bridges of solid stone which the ancients had built. These and the iron bridges likewise were overthrown, and presently quite disappeared, for the very foundations were covered with the sand and gravel silted up.

Thus, too, the sites of many villages and towns that anciently existed along the rivers, or on the lower lands adjoining, were concealed by the water and the mud it brought with it. The sedges and reeds that arose completed the work and left nothing visible, so that the mighty buildings of olden days were by these means utterly buried. And, as has been proved by those who have dug for treasures, in our time the very foundations are deep beneath the earth, and not to be got at for the water that oozes into the shafts that they have tried to sink through the sand and mud banks.

From an elevation, therefore, there was nothing visible but endless forest and marsh. On the level ground and plains the view was limited to a short distance, because of the thickets and the saplings which had now become young trees. The downs only were still partially open, yet it was not convenient to walk upon them except in the tracks of animals, because of the long grass which, being no more regularly grazed upon by sheep, as was once the case, grew thick and tangled. Furze, too, and heath covered the slopes, and in places vast quantities of fern. There had always been copses of fir and beech and nut-tree covers, and these increased and spread, while bramble, briar, and hawthorn extended around them.

By degrees the trees of the vale seemed as it were to invade and march up the hills, and, as we see in our time, in many places the downs are hidden altogether with a stunted kind of forest. But all the above happened in the time of the first generation. Besides these things a great physical change took place; but before I speak of that, it will be best to relate what effects were produced upon animals and men.

In the first years after the fields were left to themselves, the fallen and over-ripe corn crops became the resort of innumerable mice. They swarmed to an incredible degree, not only devouring the grain upon the straw that had never been cut, but clearing out every single ear in the wheat-ricks that were standing about the country. Nothing remained in these ricks but straw, pierced with tunnels and runs, the home and breeding-place of mice, which thence poured forth into the fields. Such grain as had been left in barns and granaries, in mills, and in warehouses of the deserted towns, disappeared in the same manner.

When men tried to raise crops in small gardens and enclosures for their sustenance, these legions of mice rushed in and destroyed the produce of their labour. Nothing could keep them out, and if a score were killed, a hundred more supplied their place. These mice were preyed upon by kestrel hawks, owls, and weasels; but at first they made little or no appreciable difference. In a few years, however, the weasels, having such a superabundance of food, trebled in numbers, and in the same way the hawks, owls, and foxes increased. There was then some relief, but even now at intervals districts are invaded, and the granaries and the

standing corn suffer from these depredations.

This does not happen every year, but only at intervals, for it is noticed that mice abound very much more in some seasons than others. The extraordinary multiplication of these creatures was the means of providing food for the cats that had been abandoned in the towns, and came forth into the country in droves. Feeding on the mice, they became, in a very short time, quite wild, and their descendants now roam the forest.

In our houses we still have several varieties of the domestic cat, such as the tortoise-shell, which is the most prized, but when the above-mentioned cats became wild, after a while the several varieties disappeared, and left but one wild kind. Those which are now so often seen in the forest, and which do so much mischief about houses and enclosures, are almost all greyish, some being striped, and they are also much longer in the body than the tame. A few are jet black; their skins are then preferred by hunters.

Though the forest cat retires from the sight of man as much as possible, yet it is extremely fierce in defence of its young, and instances have been known where travellers in the woods have been attacked upon unwittingly approaching their dens. Dropping from the boughs of a tree upon the shoulders, the creature flies at the face, inflicting deep scratches and bites, exceedingly painful, and sometimes dangerous, from the tendency to fester. But such cases are rare, and the reason the forest cat is so detested is because it preys upon fowls and poultry, mounting with ease the trees or places where they roost.

Almost worse than the mice were the rats, which came out of the old cities in such vast numbers that the people who survived and saw them are related to have fled in fear. This terror, however, did not last so long as the evil of the mice, for the rats, probably not finding sufficient food when together, scattered abroad, and were destroyed singly by the cats and dogs, who slew them by thousands, far more than they could afterwards eat, so that the carcasses were left to decay. It is said that, overcome with hunger, these armies of rats in some cases fell upon each other, and fed on their own kindred. They are still numerous, but do not appear to do the same amount of damage as is occasionally caused by the mice, when the latter invade the cultivated lands.

The dogs, of course, like the cats, were forced by starvation into the fields, where they perished in incredible numbers. Of many species of dogs which are stated to have been plentiful among the ancients, we have now nothing but the name. The poodle is extinct, the Maltese terrier, the Pomeranian, the Italian greyhound, and, it is believed, great numbers of crosses and mongrels have utterly disappeared. There was none to feed them, and they could not find food for themselves, nor could they stand the rigour of the winter when exposed to the frost in the open air.

Some kinds, more hardy and fitted by nature for the chase, became wild, and their descendants are now found in the woods. Of these, there are three sorts which keep apart from each other, and are thought not to interbreed. The most numerous are the black. The black wood-dog is short and stoutly made, with shaggy hair, sometimes marked with white patches.

There can be no doubt that it is the descendant of the ancient sheep-dog, for it is known that the sheep-dog was of that character, and it is said that those who used to keep sheep soon found their dogs abandon the fold, and join the wild troops that fell upon the sheep. The black wood-dogs hunt in packs of ten or more (as many as forty have been counted), and are the pest of the farmer, for, unless his flocks are protected at night within stockades or enclosures, they are certain to be attacked. Not satisfied with killing enough to satisfy hunger, these dogs tear and mangle for sheer delight of blood, and will destroy twenty times as many as they can eat, leaving the miserably torn carcasses on the field. Nor are the sheep always safe by day if the wood-dogs happen to be hungry. The shepherd is, therefore, usually accompanied by two or three mastiffs, of whose great size and strength the others stand in awe. At night, and when in large packs, starving in the snow, not even the mastiffs can check them.

No wood-dog, of any kind, has ever been known to attack man, and the hunter in the forest hears their bark in every direction without fear. It is, nevertheless, best to retire out of their way when charging sheep in packs, for they then seem seized with a blind fury, and some who have endeavoured to fight them have been thrown down and seriously mauled. But this has been in the blindness of their rush; no instance has ever been known of their purposely attacking man.

These black wood-dogs will also chase and finally pull down cattle, if they can get within the enclosures, and even horses have fallen victims to their untiring thirst for blood. Not even the wild cattle can always escape, despite their strength, and they have been known to run down stags, though not their usual quarry.

The next kind of wild wood-dog is the yellow, a smaller animal, with smooth hair inclining to a yellow colour, which lives principally upon game, chasing all, from the hare to the stag. It is as swift, or nearly as swift, as the greyhound, and possesses greater endurance. In coursing the hare, it not uncommonly happens that these dogs start from the brake and take the hare, when nearly exhausted, from the hunter's hounds. They will in the same way follow a stag, which has been almost run down by the hunters, and bring him to bay, though in this case they lose their booty, dispersing through fear of man, when the hunters come up in a body.

But such is their love of the chase, that they are known to assemble from their lairs at the distant sound of the horn, and, as the hunters ride through the woods, they often see the yellow dogs flitting along side by side with them through bush and fern. These animals sometimes hunt singly, sometimes in couples, and as the season advances, and winter approaches, in packs of eight or twelve. They never attack sheep or cattle, and avoid man, except when they perceive he is engaged in the chase. There is little doubt that they are the descendants of the dogs which the ancients called lurchers, crossed, perhaps, with the greyhound, and possibly other breeds. When the various species of dogs were thrown on their own resources, those only withstood the exposure and hardships which were naturally hardy, and possessed natural aptitude for the chase.

The third species of wood-dog is the white. They are low on the legs, of a dingy white colour, and much smaller than the other two. They neither attack cattle nor game, though fond of hunting rabbits. This dog is, in

fact, a scavenger, living upon the carcasses of dead sheep and animals, which are found picked clean in the night. For this purpose it haunts the neighbourhood of habitations, and prowls in the evening over heaps of refuse, scampering away at the least alarm, for it is extremely timid.

It is perfectly harmless, for even the poultry do not dread it, and it will not face a tame cat, if by chance the two meet. It is rarely met with far from habitations, though it will accompany an army on the march. It may be said to remain in one district. The black and yellow dogs, on the contrary, roam about the forest without apparent home. One day the hunter sees signs of their presence, and perhaps may, for a month afterwards, not so much as hear a bark.

This uncertainty in the case of the black dog is the bane of the shepherds; for, not seeing or hearing anything of the enemy for months altogether, in spite of former experience their vigilance relaxes, and suddenly, while they sleep, their flocks are scattered. We still have, among tame dogs, the mastiff, terrier, spaniel, deerhound, and greyhound, all of which are as faithful to man as ever.

Into Space

By Sterner St. Paul http://en.wikipedia.org/wiki/S._P._Meek
from *Astounding Stories of Super-Science February 1930*
<http://www.gutenberg.org/ebooks/28617>

What was the extraordinary connection between Dr. Livermore's sudden disappearance and the coming of a new satellite to the Earth?

[Illustration: _A loud hum filled the air, and suddenly the projectile rose, gaining speed rapidly._]

Many of my readers will remember the mysterious radio messages which were heard by both amateur and professional short wave operators during the nights of the twenty-third and twenty-fourth of last September, and even more will remember the astounding discovery made by Professor Montescue of the Lick Observatory on the night of September twenty-fifth. At the time, some inspired writers tried to connect the two events, maintaining that the discovery of the fact that the earth had a new satellite coincident with the receipt of the mysterious messages was evidence that the new planetoid was inhabited and that the messages were attempts on the part of the inhabitants to communicate with us.

The fact that the messages were on a lower wave length than any receiver then in existence could receive with any degree of clarity, and the additional fact that they appeared to come from an immense distance lent a certain air of plausibility to these ebullitions in the Sunday magazine sections. For some weeks the feature writers harped on the subject, but the hurried construction of new receivers which would work on a lower wave length yielded no results, and the solemn pronouncements of astronomers to the effect that the new celestial body could by no

possibility have an atmosphere on account of its small size finally put an end to the talk. So the matter lapsed into oblivion.

While quite a few people will remember the two events I have noted, I doubt whether there are five hundred people alive who will remember anything at all about the disappearance of Dr. Livermore of the University of Calvada on September twenty-third. He was a man of some local prominence, but he had no more than a local fame, and few papers outside of California even noted the event in their columns. I do not think that anyone ever tried to connect up his disappearance with the radio messages or the discovery of the new earthly satellite; yet the three events were closely bound up together, and but for the Doctor's disappearance, the other two would never have happened.

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Dr. Livermore taught physics at Calvada, or at least he taught the subject when he remembered that he had a class and felt like teaching. His students never knew whether he would appear at class or not; but he always passed everyone who took his courses and so, of course, they were always crowded. The University authorities used to remonstrate with him, but his ability as a research worker was so well known and recognized that he was allowed to go about as he pleased. He was a bachelor who lived alone and who had no interests in life, so far as anyone knew, other than his work.

I first made contact with him when I was a freshman at Calvada, and for some unknown reason he took a liking to me. My father had insisted that I follow in his footsteps as an electrical engineer; as he was paying my bills, I had to make a show at studying engineering while I clandestinely pursued my hobby, literature. Dr. Livermore's courses were the easiest in the school and they counted as science, so I regularly registered for them, cut them, and attended a class in literature as an auditor. The Doctor used to meet me on the campus and laughingly scold me for my absence, but he was really in sympathy with my ambition and he regularly gave me a passing mark and my units of credit without regard to my attendance, or, rather, lack of it.

When I graduated from Calvada I was theoretically an electrical engineer. Practically I had a pretty good knowledge of contemporary literature and knew almost nothing about my so-called profession. I stalled around Dad's office for a few months until I landed a job as a cub reporter on the San Francisco _Graphic_ and then I quit him cold. When the storm blew over, Dad admitted that you couldn't make a silk purse out of a sow's ear and agreed with a grunt to my new line of work. He said that I would probably be a better reporter than an engineer because I couldn't by any possibility be a worse one, and let it go at that. However, all this has nothing to do with the story. It just explains how I came to be acquainted with Dr. Livermore, in the first place, and why he sent for me on September twenty-second, in the second place.

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The morning of the twenty-second the City Editor called me in and asked me if I knew "Old Liverpills."

"He says that he has a good story ready to break but he won't talk to

anyone but you," went on Barnes. "I offered to send out a good man, for when Old Liverpills starts a story it ought to be good, but all I got was a high powered bawling out. He said that he would talk to you or no one and would just as soon talk to no one as to me any longer. Then he hung up. You'd better take a run out to Calvada and see what he has to say. I can have a good man rewrite your drivel when you get back."

I was more or less used to that sort of talk from Barnes so I paid no attention to it. I drove my flivver down to Calvada and asked for the Doctor.

"Dr. Livermore?" said the bursar. "Why, he hasn't been around here for the last ten months. This is his sabbatical year and he is spending it on a ranch he owns up at Hat Creek, near Mount Lassen. You'll have to go there if you want to see him."

I knew better than to report back to Barnes without the story, so there was nothing to it but to drive up to Hat Creek, and a long, hard drive it was. I made Redding late that night; the next day I drove on to Burney and asked for directions to the Doctor's ranch.

"So you're going up to Doc Livermore's, are you?" asked the Postmaster, my informant. "Have you got an invitation?"

I assured him that I had.

"It's a good thing," he replied, "because he don't allow anyone on his place without one. I'd like to go up there myself and see what's going on, but I don't want to get shot at like old Pete Johnson did when he tried to drop in on the Doc and pay him a little call. There's something mighty funny going on up there."

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Naturally I tried to find out what was going on but evidently the Postmaster, who was also the express agent, didn't know. All he could tell me was that a "lot of junk" had come for the Doctor by express and that a lot more had been hauled in by truck from Redding.

"What kind of junk?" I asked him.

"Almost everything, Bub: sheet steel, machinery, batteries, cases of glass, and Lord knows what all. It's been going on ever since he landed there. He has a bunch of Indians working for him and he don't let a white man on the place."

Forced to be satisfied with this meager information, I started old Lizzie and lit out for the ranch. After I had turned off the main trail I met no one until the ranch house was in sight. As I rounded a bend in the road which brought me in sight of the building, I was forced to put on my brakes at top speed to avoid running into a chain which was stretched across the road. An Indian armed with a Winchester rifle stood behind it, and when I stopped he came up and asked my business.

"My business is with Dr. Livermore," I said tartly.

"You got letter?" he inquired.

"No," I answered.

"No ketchum letter, no ketchum Doctor," he replied, and walked stolidly back to his post.

"This is absurd," I shouted, and drove Lizzie up to the chain. I saw that it was merely hooked to a ring at the end, and I climbed out and started to take it down. A thirty-thirty bullet embedded itself in the post an inch or two from my head, and I changed my mind about taking down that chain.

"No ketchum letter, no ketchum Doctor," said the Indian laconically as he pumped another shell into his gun.

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I was balked, until I noticed a pair of telephone wires running from the house to the tree to which one end of the chain was fastened.

"Is that a telephone to the house?" I demanded.

The Indian grunted an assent.

"Dr. Livermore telephoned me to come and see him," I said. "Can't I call him up and see if he still wants to see me?"

The Indian debated the question with himself for a minute and then nodded a doubtful assent. I cranked the old coffee mill type of telephone which I found, and presently heard the voice of Dr. Livermore.

"This is Tom Faber, Doctor," I said. "The _Graphic_ sent me up to get a story from you, but there's an Indian here who started to murder me when I tried to get past your barricade."

"Good for him," chuckled the Doctor. "I heard the shot, but didn't know that he was shooting at you. Tell him to talk to me."

The Indian took the telephone at my bidding and listened for a minute.

"You go in," he agreed when he hung up the receiver.

He took down the chain and I drove on up to the house, to find the Doctor waiting for me on the veranda.

"Hello, Tom," he greeted me heartily. "So you had trouble with my guard, did you?"

"I nearly got murdered," I said ruefully.

"I expect that Joe would have drilled you if you had tried to force your way in," he remarked cheerfully. "I forgot to tell him that you were coming to-day. I told him you would be here yesterday, but yesterday isn't to-day to that Indian. I wasn't sure you would get here at all, in point of fact, for I didn't know whether that old fool I talked to in your office would send you or some one else. If anyone else had been sent, he would have never got by Joe, I can tell you. Come in. Where's your bag?"

"I haven't one," I replied. "I went to Calvada yesterday to see you, and didn't know until I got there that you were up here."

The Doctor chuckled.

"I guess I forgot to tell where I was," he said. "That man I talked to got me so mad that I hung up on him before I told him. It doesn't matter, though. I can dig you up a new toothbrush, and I guess you can make out with that. Come in."

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I followed him into the house, and he showed me a room fitted with a crude bunk, a washstand, a bowl and a pitcher.

"You won't have many luxuries here, Tom," he said, "but you won't need to stay here for more than a few days. My work is done: I am ready to start. In fact, I would have started yesterday instead of to-day, had you arrived. Now don't ask any questions; it's nearly lunch time."

"What's the story, Doctor?" I asked after lunch as I puffed one of his excellent cigars. "And why did you pick me to tell it to?"

"For several reasons," he replied, ignoring my first question. "In the first place, I like you and I think that you can keep your mouth shut until you are told to open it. In the second place, I have always found that you had the gift of vision or imagination and have the ability to believe. In the third place, you are the only man I know who had the literary ability to write up a good story and at the same time has the scientific background to grasp what it is all about. Understand that unless I have your promise not to write this story until I tell you that you can, not a word will I tell you."

I reflected for a moment. The _Graphic_ would expect the story when I got back, but on the other hand I knew that unless I gave the desired promise, the Doctor wouldn't talk.

"All right," I assented, "I'll promise."

"Good!" he replied. "In that case, I'll tell you all about it. No doubt you, like the rest of the world, think that I'm crazy?"

"Why, not at all," I stammered. In point of fact, I had often harbored such a suspicion.

"Oh, that's all right," he went on cheerfully. "I _am_ crazy, crazy as a loon, which, by the way, is a highly sensible bird with a well balanced mentality. There is no doubt that I am crazy, but my craziness is not of the usual type. Mine is the insanity of genius."

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He looked at me sharply as he spoke, but long sessions at poker in the San Francisco Press Club had taught me how to control my facial muscles, and I never batted an eye. He seemed satisfied, and went on.

"From your college work you are familiar with the laws of magnetism," he said. "Perhaps, considering just what your college career really was, I

might better say that you are supposed to be familiar with them."

I joined with him in his laughter.

"It won't require a very deep knowledge to follow the thread of my argument," he went on. "You know, of course, that the force of magnetic attraction is inversely proportional to the square of the distances separating the magnet and the attracted particles, and also that each magnetized particle had two poles, a positive and a negative pole, or a north pole and a south pole, as they are usually called?"

I nodded.

"Consider for a moment that the laws of magnetism, insofar as concerns the relation between distance and power of attraction, are exactly matched by the laws of gravitation."

"But there the similarity between the two forces ends," I interrupted.

"But there the similarity does not end," he said sharply. "That is the crux of the discovery which I have made: that magnetism and gravity are one and the same, or, rather, that the two are separate, but similar manifestations of one force. The parallel between the two grows closer with each succeeding experiment. You know, for example, that each magnetized particle has two poles. Similarly each gravitized particle, to coin a new word, had two poles, one positive and one negative. Every particle on the earth is so oriented that the negative poles point toward the positive center of the earth. This is what causes the commonly known phenomena of gravity or weight."

"I can prove the fallacy of that in a moment," I retorted.

"There are none so blind as those who will not see," he quoted with an icy smile. "I can probably predict your puerile argument, but go ahead and present it."

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"If two magnets are placed so that the north pole of one is in juxtaposition to the south pole of the other, they attract one another," I said. "If the position of the magnets be reversed so that the two similar poles are opposite, they will repel. If your theory were correct, a man standing on his head would fall off the earth."

"Exactly what I expected," he replied. "Now let me ask you a question. Have you ever seen a small bar magnet placed within the field of attraction of a large electromagnet? Of course you have, and you have noticed that, when the north pole of the bar magnet was pointed toward the electromagnet, the bar was attracted. However, when the bar was reversed and the south pole pointed toward the electromagnet, the bar was still attracted. You doubtless remember that experiment."

"But in that case the magnetism of the electromagnet was so large that the polarity of the small magnet was reversed!" I cried.

"Exactly, and the field of gravity of the earth is so great compared to the gravity of a man that when he stands on his head, his polarity is instantly reversed."

I nodded. His explanation was too logical for me to pick a flaw in it.

"If that same bar magnet were held in the field of the electromagnet with its north pole pointed toward the magnet and then, by the action of some outside force of sufficient power, its polarity were reversed, the bar would be repelled. If the magnetism were neutralized and held exactly neutral, it would be neither repelled nor attracted, but would act only as the force of gravity impelled it. Is that clear?"

"Perfectly," I assented.

"That, then, paves the way for what I have to tell you. I have developed an electrical method of neutralizing the gravity of a body while it is within the field of the earth, and also, by a slight extension, a method of entirely reversing its polarity."

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I nodded calmly.

"Do you realize what this means?" he cried.

"No," I replied, puzzled by his great excitement.

"Man alive," he cried, "it means that the problem of aerial flight is entirely revolutionized, and that the era of interplanetary travel is at hand! Suppose that I construct an airship and then render it neutral to gravity. It would weigh nothing, _absolutely nothing_! The tiniest propeller would drive it at almost incalculable speed with a minimum consumption of power, for the only resistance to its motion would be the resistance of the air. If I were to reverse the polarity, it would be repelled from the earth with the same force with which it is now attracted, and it would rise with the same acceleration as a body falls toward the earth. It would travel to the moon in two hours and forty minutes."

"Air resistance would--"

"There is no air a few miles from the earth. Of course, I do not mean that such a craft would take off from the earth and land on the moon three hours later. There are two things which would interfere with that.

One is the fact that the propelling force, the gravity of the earth, would diminish as the square of the distance from the center of the earth, and the other is that when the band of neutral attraction, or rather repulsion, between the earth and the moon had been reached, it would be necessary to decelerate so as to avoid a smash on landing. I have been over the whole thing and I find that it would take twenty-nine hours and fifty-two minutes to make the whole trip. The entire thing is perfectly possible. In fact, I have asked you here to witness and report the first interplanetary trip to be made."

"Have you constructed such a device?" I cried.

"My space ship is finished and ready for your inspection," he replied.
"If you will come with me, I will show it to you."

* * * * *

Hardly knowing what to believe, I followed him from the house and to a huge barnlike structure, over a hundred feet high, which stood nearby. He opened the door and switched on a light, and there before me stood what looked at first glance to be a huge artillery shell, but of a size larger than any ever made. It was constructed of sheet steel, and while the lower part was solid, the upper sections had huge glass windows set in them. On the point was a mushroom shaped protuberance. It measured perhaps fifty feet in diameter and was one hundred and forty feet high, the Doctor informed me. A ladder led from the floor to a door about fifty feet from the ground.

I followed the Doctor up the ladder and into the space flier. The door led us into a comfortable living room through a double door arrangement.

"The whole hull beneath us," explained the Doctor, "is filled with batteries and machinery except for a space in the center, where a shaft leads to a glass window in the bottom so that I can see behind me, so to speak. The space above is filled with storerooms and the air purifying apparatus. On this level is my bedroom, kitchen, and other living rooms, together with a laboratory and an observatory. There is a central control room located on an upper level, but it need seldom be entered, for the craft can be controlled by a system of relays from this room or from any other room in the ship. I suppose that you are more or less familiar with imaginative stories of interplanetary travel?"

* * * *

I nodded an assent.

"In that case there is no use in going over the details of the air purifying and such matters," he said. "The story writers have worked out all that sort of thing in great detail, and there is nothing novel in my arrangements. I carry food and water for six months and air enough for two months by constant renovating. Have you any question you wish to ask?"

"One objection I have seen frequently raised to the idea of interplanetary travel is that the human body could not stand the rapid acceleration which would be necessary to attain speed enough to ever get anywhere. How do you overcome this?"

"My dear boy, who knows what the human body can stand? When the locomotive was first invented learned scientists predicted that the limit of speed was thirty miles an hour, as the human body could not stand a higher speed. To-day the human body stands a speed of three hundred and sixty miles an hour without ill effects. At any rate, on my first trip I intend to take no chances. We know that the body can stand an acceleration of thirty-two feet per second without trouble. That is the rate of acceleration due to gravity and is the rate at which a body increases speed when it falls. This is the acceleration which I will use.

"Remember that the space traveled by a falling body in a vacuum is equal to one half the acceleration multiplied by the square of the elapsed time. The moon, to which I intend to make my first trip, is only 280,000 miles, or 1,478,400,000 feet, from us. With an acceleration of thirty-two feet per second, I would pass the moon two hours and forty

minutes after leaving the earth. If I later take another trip, say to Mars, I will have to find a means of increasing my acceleration, possibly by the use of the rocket principle. Then will be time enough to worry about what my body will stand."

A short calculation verified the figures the Doctor had given me, and I stood convinced.

"Are you really going?" I asked.

"Most decidedly. To repeat, I would have started yesterday, had you arrived. As it is, I am ready to start at once. We will go back to the house for a few minutes while I show you the location of an excellent telescope through which you may watch my progress, and instruct you in the use of an ultra-short-wave receiver which I am confident will pierce the heaviest layer. With this I will keep in communication with you, although I have made no arrangements for you to send messages to me on this trip. I intend to go to the moon and land. I will take atmosphere samples through an air port and, if there is an atmosphere which will support life, I will step out on the surface. If there is not, I will return to the earth."

* * * * *

A few minutes was enough for me to grasp the simple manipulations which I would have to perform, and I followed him again to the space flier.

"How are you going to get it out?" I asked.

"Watch," he said.

He worked some levers and the roof of the barn folded back, leaving the way clear for the departure of the huge projectile. I followed him inside and he climbed the ladder.

"When I shut the door, go back to the house and test the radio," he directed.

The door clanged shut and I hastened into the house. His voice came plainly enough. I went back to the flier and waved him a final farewell, which he acknowledged through a window; then I returned to the receiver. A loud hum filled the air, and suddenly the projectile rose and flew out through the open roof, gaining speed rapidly until it was a mere speck in the sky. It vanished. I had no trouble in picking him up with the telescope. In fact, I could see the Doctor through one of the windows.

"I have passed beyond the range of the atmosphere, Tom," came his voice over the receiver, "and I find that everything is going exactly as it should. I feel no discomfort, and my only regret is that I did not install a transmitter in the house so that you could talk to me; but there is no real necessity for it. I am going to make some observations now, but I will call you again with a report of progress in half-an-hour."

* * * * *

For the rest of the afternoon and all of that night I received his messages regularly, but with the coming of daylight they began to fade.

By nine o'clock I could get only a word here and there. By noon I could hear nothing. I went to sleep hoping that the night would bring better reception, nor was I disappointed. About eight o'clock I received a message, rather faintly, but none the less distinctly.

"I regret more than ever that I did not install a transmitter so that I could learn from you whether you are receiving my messages," his voice said faintly. "I have no idea of whether you can hear me or not, but I will keep on repeating this message every hour while my battery holds out. It is now thirty hours since I left the earth and I should be on the moon, according to my calculations. But I am not, and never will be. I am caught at the neutral point where the gravity of the earth and the moon are exactly equal.

"I had relied on my momentum to carry me over this point. Once over it, I expected to reverse my polarity and fall on the moon. My momentum did not do so. If I keep my polarity as it was when left the earth, both the earth and the moon repel me. If I reverse it, they both attract me, and again I cannot move. If I had equipped my space flier with a rocket so that I could move a few miles, or even a few feet, from the dead line, I could proceed, but I did not do so, and I cannot move forward or back. Apparently I am doomed to stay here until my air gives out. Then my body, entombed in my space ship, will endlessly circle the earth as a satellite until the end of time. There is no hope for me, for long before a duplicate of my device equipped with rockets could be constructed and come to my rescue, my air would be exhausted. Good-by, Tom. You may write your story as soon as you wish. I will repeat my message in one hour. Good-by!"

At nine and at ten o'clock the message was repeated. At eleven it started again but after a few sentences the sound suddenly ceased and the receiver went dead. I thought that the fault was with the receiver and I toiled feverishly the rest of the night, but without result. I learned later that the messages heard all over the world ceased at the same hour.

The next morning Professor Montescue announced his discovery of the world's new satellite.

WHAT'S HE DOING IN THERE?

<http://www.gutenberg.org/ebooks/29504>

By FRITZ LEIBER

_He went where no Martian ever
went before--but would he come
out--or had he gone for good?_

The Professor was congratulating Earth's first visitor from another planet on his wisdom in getting in touch with a cultural anthropologist before contacting any other scientists (or governments, God forbid!), and in learning English from radio and TV before landing from his orbit-parked rocket, when the Martian stood up and said hesitantly, "Excuse me, please, but where is it?"

That baffled the Professor and the Martian seemed to grow anxious--at least his long mouth curved upward, and he had earlier explained that it curling downward was his smile--and he repeated, "Please, where is it?"

He was surprisingly humanoid in most respects, but his complexion was textured so like the rich dark armchair he'd just been occupying that the Professor's pin-striped gray suit, which he had eagerly consented to wear, seemed an arbitrary interruption between him and the chair--a sort of Mother Hubbard dress on a phantom conjured from its leather.

The Professor's Wife, always a perceptive hostess, came to her husband's rescue by saying with equal rapidity, "Top of the stairs, end of the hall, last door."

The Martian's mouth curled happily downward and he said, "Thank you very much," and was off.

Comprehension burst on the Professor. He caught up with his guest at the foot of the stairs.

"Here, I'll show you the way," he said.

"No, I can find it myself, thank you," the Martian assured him.

* * * * *

Something rather final in the Martian's tone made the Professor desist, and after watching his visitor sway up the stairs with an almost hypnotic softly jogging movement, he rejoined his wife in the study, saying wonderingly, "Who'd have thought it, by George! Function taboos as strict as our own!"

"I'm glad some of your professional visitors maintain 'em," his wife said darkly.

"But this one's from Mars, darling, and to find out he's--well, similar in an aspect of his life is as thrilling as the discovery that water is burned hydrogen. When I think of the day not far distant when I'll put his entries in the cross-cultural index ..."

He was still rhapsodizing when the Professor's Little Son raced in.

"Pop, the Martian's gone to the bathroom!"

"Hush, dear. Manners."

"Now it's perfectly natural, darling, that the boy should notice and be excited. Yes, Son, the Martian's not so very different from us."

"Oh, certainly," the Professor's Wife said with a trace of bitterness. "I don't imagine his turquoise complexion will cause any comment at all when you bring him to a faculty reception. They'll just figure he's had a hard night--and that he got that baby-elephant nose sniffing around for assistant professorships."

"Really, darling! He probably thinks of our noses as disagreeably amputated and paralyzed."

"Well, anyway, Pop, he's in the bathroom. I followed him when he squiggled upstairs."

"Now, Son, you shouldn't have done that. He's on a strange planet and it might make him nervous if he thought he was being spied on. We must show him every courtesy. By George, I can't wait to discuss these things with Ackerly-Ramsbottom! When I think of how much more this encounter has to give the anthropologist than even the physicist or astronomer ..."

He was still going strong on his second rhapsody when he was interrupted by another high-speed entrance. It was the Professor's Coltish Daughter.

"Mom, Pop, the Martian's--"

"Hush, dear. We know."

The Professor's Coltish Daughter regained her adolescent poise, which was considerable. "Well, he's still in there," she said. "I just tried the door and it was locked."

"I'm glad it was!" the Professor said while his wife added, "Yes, you can't be sure what--" and caught herself. "Really, dear, that was very bad manners."

"I thought he'd come downstairs long ago," her daughter explained. "He's been in there an awfully long time. It must have been a half hour ago that I saw him gyre and gimbal upstairs in that real gone way he has, with Nosy here following him." The Professor's Coltish Daughter was currently soaking up both jive and _Alice_.

* * * * *

When the Professor checked his wristwatch, his expression grew troubled. "By George, he is taking his time! Though, of course, we don't know how much time Martians ... I wonder."

"I listened for a while, Pop," his son volunteered. "He was running the water a lot."

"Running the water, eh? We know Mars is a water-starved planet. I suppose that in the presence of unlimited water, he might be seized by a kind of madness and ... But he seemed so well adjusted."

Then his wife spoke, voicing all their thoughts. Her outlook on life gave her a naturally sepulchral voice.

"_What's he doing in there?_"

Twenty minutes and at least as many fantastic suggestions later, the Professor glanced again at his watch and nerved himself for action. Motioning his family aside, he mounted the stairs and tiptoed down the hall.

He paused only once to shake his head and mutter under his breath, "By George, I wish I had Fenchurch or von Gottschalk here. They're a shade better than I am on intercultural contracts, especially taboo-breakings

and affronts ..."

His family followed him at a short distance.

The Professor stopped in front of the bathroom door. Everything was quiet as death.

He listened for a minute and then rapped measuredly, steadying his hand by clutching its wrist with the other. There was a faint splashing, but no other sound.

Another minute passed. The Professor rapped again. Now there was no response at all. He very gingerly tried the knob. The door was still locked.

When they had retreated to the stairs, it was the Professor's Wife who once more voiced their thoughts. This time her voice carried overtones of supernatural horror.

"_What's he doing in there?_"

"He may be dead or dying," the Professor's Coltish Daughter suggested briskly. "Maybe we ought to call the Fire Department, like they did for old Mrs. Frisbee."

The Professor winced. "I'm afraid you haven't visualized the complications, dear," he said gently. "No one but ourselves knows that the Martian is on Earth, or has even the slightest inkling that interplanetary travel has been achieved. Whatever we do, it will have to be on our own. But to break in on a creature engaged in--well, we don't know what primal private activity--is against all anthropological practice. Still--"

"Dying's a primal activity," his daughter said crisply.

"So's ritual bathing before mass murder," his wife added.

"Please! Still, as I was about to say, we do have the moral duty to succor him if, as you all too reasonably suggest, he has been incapacitated by a germ or virus or, more likely, by some simple environmental factor such as Earth's greater gravity."

"Tell you what, Pop--I can look in the bathroom window and see what he's doing. All I have to do is crawl out my bedroom window and along the gutter a little ways. It's safe as houses."

* * * * *

The Professor's question beginning with, "Son, how do you know--" died unuttered and he refused to notice the words his daughter was voicing silently at her brother. He glanced at his wife's sardonically composed face, thought once more of the Fire Department and of other and larger and even more jealous--or would it be skeptical?--government agencies, and clutched at the straw offered him.

Ten minutes later, he was quite unnecessarily assisting his son back through the bedroom window.

"Gee, Pop, I couldn't see a sign of him. That's why I took so long. Hey, Pop, don't look so scared. He's in there, sure enough. It's just that the bathtub's under the window and you have to get real close up to see into it."

"The Martian's taking a bath?"

"Yep. Got it full up and just the end of his little old schnozzle sticking out. Your suit, Pop, was hanging on the door."

The one word the Professor's Wife spoke was like a death knell.

"_Drowned!_"

"No, Ma, I don't think so. His schnozzle was opening and closing regular like."

"Maybe he's a shape-changer," the Professor's Coltish Daughter said in a burst of evil fantasy. "Maybe he softens in water and thins out after a while until he's like an eel and then he'll go exploring through the sewer pipes. Wouldn't it be funny if he went under the street and knocked on the stopper from underneath and crawled into the bathtub with President Rexford, or Mrs. President Rexford, or maybe right into the middle of one of Janey Rexford's Oh-I'm-so-sexy bubble baths?"

"Please!" The Professor put his hand to his eyebrows and kept it there, cuddling the elbow in his other hand.

"Well, have you thought of something?" the Professor's Wife asked him after a bit. "What are you going to do?"

The Professor dropped his hand and blinked his eyes hard and took a deep breath.

"Telegraph Fenchurch and Ackerly-Ramsbottom and then break in," he said in a resigned voice, into which, nevertheless, a note of hope seemed also to have come. "First, however, I'm going to wait until morning."

And he sat down cross-legged in the hall a few yards from the bathroom door and folded his arms.

* * * * *

So the long vigil commenced.

The Professor's family shared it and he offered no objection. Other and sterner men, he told himself, might claim to be able successfully to order their children to go to bed when there was a Martian locked in the bathroom, but he would like to see them faced with the situation.

Finally dawn began to seep from the bedrooms. When the bulb in the hall had grown quite dim, the Professor unfolded his arms.

Just then, there was a loud splashing in the bathroom. The Professor's family looked toward the door. The splashing stopped and they heard the Martian moving around. Then the door opened and the Martian appeared in the Professor's gray pin-stripe suit. His mouth curled sharply downward in a broad alien smile as he saw the Professor.

"Good morning!" the Martian said happily. "I never slept better in my life, even in my own little wet bed back on Mars."

He looked around more closely and his mouth straightened. "But where did you all sleep?" he asked. "Don't tell me you stayed dry all night! You _didn't_ give up your only bed to me?"

His mouth curled upward in misery. "Oh, dear," he said, "I'm afraid I've made a mistake somehow. Yet I don't understand how. Before I studied you, I didn't know what your sleeping habits would be, but that question was answered for me--in fact, it looked so reassuringly homelike--when I saw those brief TV scenes of your females ready for sleep in their little tubs. Of course, on Mars, only the fortunate can always be sure of sleeping wet, but here, with your abundance of water, I thought there would be wet beds for all."

He paused. "It's true I had some doubts last night, wondering if I'd used the right words and all, but then when you rapped 'Good night' to me, I splashed the sentiment back at you and went to sleep in a wink. But I'm afraid that somewhere I've blundered and--"

"No, no, dear chap," the Professor managed to say. He had been waving his hand in a gentle circle for some time in token that he wanted to interrupt. "Everything is quite all right. It's true we stayed up all night, but please consider that as a watch--an honor guard, by George!--which we kept to indicate our esteem."

Transcriber's Note:

This etext was produced from _Galaxy Science Fiction_ December 1957. Extensive research did not uncover any evidence that the U.S. copyright on this publication was renewed. Minor spelling and typographical errors have been corrected without note.

SF OTR

X Minus One [*The Moon Is Green*](#)

Fritz Lieber's tragic tale of a woman in love with a man who is sure to be the death of her.

[*The Kraken Wakes*](#)

Very effective, years ahead of its time tale by John Wyndham of an alien invasion and its effects on specifically a savvy British media couple.

This is the CBC 1965 version, not as good as the original BBC version, but doable.

Escape – [*Earth Abides*](#)

Two-part dramatization of what might happen to society in post-nuke America, stars John Dehner. Earth has part 1, Abides part 2.

Lux Theater – [*The Day The Earth Stood Still*](#)

Pretty good adaptaion starring Michael Rennie, but not Patricia Neal, from the film version. His leading lady here is husky-voiced Jean Peters, who always looked better than she sounded.

Something Will Turn Up

<http://www.gutenberg.org/ebooks/24189>

by
David Mason

Err ... maybe it had to do with this being
a non-Parity universe, perhaps?
Some things can't be simply inverted, after all....

"You, Mr. Rapp?"

Stanley Rapp blinked, considering the matter. He always thought over everything very carefully. Of course, some questions were easier to answer than others. This one, for instance. He had very few doubts about his name.

"Uh," Stanley Rapp said. "Yes. Yes."

He stared at the bearded young man. Living in the Village, even on the better side of it, one saw beards every day, all shapes and sizes of beard. This one was not a psychoanalyst beard, or a folk singer beard; not even an actor beard. This was the scraggly variety, almost certainly a poet beard. Mr. Rapp, while holding no particular prejudice against poets, had not sent for one, he was sure of that.

Then he noticed the toolcase in the bearded young man's hand, lettered large LIGHTNING SERVICE, TV, HI-FI.

"Oh," Stanley said, nodding. "You're the man to fix the TV set."

"You know it, Dad," the young man said, coming in. He shut the door behind him, and stared around the apartment. "What a wild pad. Where the idiot box, hey?"

The pleasantly furnished, neat little apartment was not what Mr. Rapp had ever thought of as a "wild pad." But the Village had odd standards, Mr. Rapp knew. *Chacun a son gout*, he had said, on moving into the apartment ten years ago. Not aloud, of course, because he had only taken one year of French, and would never have trusted his accent. But *chacun a son gout*, anyway.

"The television set," Mr. Rapp said, translating. "Oh, yes." He went to the closet door and opened it. Reaching inside, he brought out an imposingly large TV set, mounted on a wheeled table. The bearded repairman whistled.

"In the closet," the repairman said, admiringly. "Crazy. You go in there to watch it, or you let it talk to itself?"

"Oh. Well, I don't exactly watch it at all," Mr. Rapp said, a little sadly. "I mean, I can't. That's why I called you."

"Lightning's here, have no fear," the bearded one said, approaching the set with a professional air. "Like, in the closet, hey." He bent over the set, appraisingly. "I thought you were a square, Pops, but I can see you're.... Hey, this is like too much. Man, I don't want to pry, but why is this box upside down?"

"I wish I knew," Mr. Rapp said. He sat down, and leaned back, sighing. This was going to be difficult, he knew. He had already had to explain it to the last three repairmen, and he was getting tired of explaining. Although he thought, somehow, that this young man might understand it a little more quickly than the others had.

"I've had a couple of other repairmen look it over," Mr. Rapp told the bearded one. "They ... well, they gave up."

"Dilettantes," commented the beard.

"Oh, no," Mr. Rapp said. "One of them was from the company that made it. But they couldn't do anything."

"Let's try it," the repairman said, plugging the cord into a wall socket. He returned to the set, and switched it on, without changing its upside down position. The big screen lit almost at once; a pained face appeared, with a large silhouetted hammer striking the image's forehead in a rhythmic beat.

"... Immediate relief from headache," a bland voice said, as the pictured face broke into a broad smile. The repairman shuddered, and turned down the sound, staring at the image with widened eyes as he did so.

"Dad, I don't want to bug you," the repairman said, his eyes still on the screen, "only, look. The set is upside down, right?"

"Right," said Mr. Rapp.

"Only the picture--" the repairman paused, trying to find the right phrase. "I mean, the picture's flipped. Like, it's wrong side up, too. Only, right side up, now."

"Exactly," said Mr. Rapp. "You see, that's the trouble. I put the set upside down because of that."

"Cool," the repairman said, watching the picture. "I mean, so why worry? You got a picture, right? You want me to turn the picture around? I can do that with a little fiddling around inside the set ... uh-oh. Dad, something's happening."

* * * * *

The repairman bent closer, staring at the picture. It was now showing a busty young woman singer, her mouth opened, but silent, since the sound was turned down. She was slowly rotating as Rapp and the bearded repairman watched, turning until her face, still mouthing silent song, hung upside down on the screen.

"It always does that," Rapp said. "No matter which way I put the set, the picture's always upside down."

"No, man," the repairman said, pleadingly. "Look, I took a course. I mean, the best school, you dig? It don't work that way. It just can't."

"It does, though," Rapp pointed out. "And that's what the other repair people said, too. They took it out, and brought it back, and it still did it. Not when they had it in their shops, but the minute it came back here, the picture went upside down again."

"Wow," the repairman said, backing slowly away from the set, but watching it with the tense gaze of a man who expected trouble. After a minute he moved toward it again, and took hold of the cabinet sides, lifting.

"I don't want to put you down, Pops," he said, grunting. "Only, I got to see this. Over she goes." He set it down again, right side up. The picture, still the singer's face, remained in a relatively upright position for another moment, and then slowly rolled over, upside down again.

"You see," Mr. Rapp said, shrugging. "I guess I'll have to buy another set. Except I'd hate to have it happen again, and this one did cost quite a lot."

"You couldn't trade it in, either," the repairman agreed. "Not to me, anyway." Suddenly he snapped his fingers. "Hey now. Sideways?"

"You mean on its side?"

"Just for kicks...." the repairman gripped the set again. "On the side...." He set the cabinet down, on one side, and stepped back, to regard the picture again.

Slowly, the picture turned once more, and once again, relative to the usual directions of up and down, the picture was stubbornly, completely inverted.

"It's onto that, too," the repairman said, gloomily. He sat down on the floor, and assumed a kind of Yoga posture, peering between his legs. "You could try it this way, Pops."

"I'm pretty stiff," Mr. Rapp told him, shaking his head.

"Yeah," the repairman said, reinverting himself. For a long while he sat, pulling his beard thoughtfully, a look of deep thought on his face. The reversed singer faded out, to give place to an earnestly grinning announcer who pointed emphatically to a large, upside down sign bearing the name of a product.

"Watching it this way could get to be a fad," the repairman said, at last, almost inaudibly. He fell silent again, and Mr. Rapp, sadly, began to realize that even this bearded and confident young man had apparently been stopped, like the others.

"The way I look at it, like, there's a place where science hangs up," the bearded one spoke, finally.

"Like, I don't want to put down my old Guru at the Second Avenue School

of Electronics," he added, solemnly. "But you got to admit that there are things not dreamed of in your philosophy, Horatio. You dig?"

"My name isn't Horatio," Mr. Rapp objected.

"I was quoting," the repairman told him. "I mean, this is a thing like, outside material means. Supernatural, sort of. Did you cross up any witches lately, Pops?"

"Oh, dear," Mr. Rapp said sadly. He shook his head. "No, I haven't ... er, offended any witches. Not that I know of." He regarded the inverted picture for a moment. Then, as the repairman's words began to sink in, Mr. Rapp looked at him apprehensively.

"Witches?" Mr. Rapp asked. "But ... I mean, that's all superstition, isn't it? And anyway ... well, television sets!"

"They used to dry up cows, but who keeps cows?" the bearded one said ominously. "Why not television sets? Like, I happen to be personally acquainted with several witches and like that. The Village is full of them. However--" He rose, and stalked toward the set, his eyes glittering in a peculiar way. "You're a lucky one, Daddyo. Back in my square days, I did some reading up on the hookups between poetry and magic. Now, I'm a poet. Therefore, and to wit, I'm also a magician. On this hangup, I'm going to try magic. Electronics won't work, that's for sure."

* * * * *

"But...." Mr. Rapp was not quite sure why he disapproved, but he did. On the other hand, the repairman appeared to be very definitely sure of what he was doing, as he peered into the back of the television set.

"Have you ever tried ... ah, this method before?"

"Never ran into any hexed TV sets before," the repairman said, straightening up. "Don't worry, though. I got the touch, like with poetry. Same thing, in fact. All magic spells rhyme, see? Well, I used to rhyme, back before I really started swinging. Anybody can rhyme. And the rest is just instinct."

He had been scribbling something on a notepad, as he spoke. Now he bent down, to take another look at the back of the set, and nodded with an air of assurance.

"The tube layout," the repairman told Mr. Rapp, exhibiting his notebook. "That, and Ohm's Law, and a couple of Hindu bits I picked up listening to the UN on the radio ... makes a first-class spell."

Mr. Rapp backed away, nervously. "Look, if it's all the same to you...."

"Don't flip." The repairman consulted his notebook, and moved to stand in front of the screen. The picture showed a smiling newscaster, pointing to a map which indicated something ominous.

"Cool, man," the repairman said. "Here we go." He lifted his hands in an ecclesiastical gesture, and his voice became a deep boom.

"6SN7, 6ac5, six and seven millivolts are running down the line, E equals R times A, that's the way it goes, go round the other way, Subhas Chandra BOSE!"

Afterward, Mr. Rapp was never quite sure exactly what happened. He had an impression of a flash of light, and an odd, indefinite sound rather like the dropping of a cosmic garbage can lid. But possibly neither the light nor the sound actually happened; at any rate, there were no complaints from the neighbors later on. However, the lighted screen was certainly doing something.

"Crazy!" the repairman said, in awed tones.

Mr. Rapp, his view partly blocked by the repairman, could not see exactly what was happening on the screen. However, he caught a brief glimpse of the newscaster's face. It was right side up, but no longer smiling. Instead, the pictured face wore a look of profound alarm, and the newsman was apparently leaning far forward, his face almost out of focus because of its nearness to the lens. Just for a moment, Mr. Rapp could have sworn he saw a chair floating up, past the agonized expression on the screen.

Then the screen went gray, and a panel of lettering appeared, shaking slightly.

OUR PICTURE HAS BEEN TEMPORARILY INTERRUPTED. NORMAL SERVICE WILL BE RESTORED AS SOON AS POSSIBLE. PLEASE STAND BY.

"I was going to give you a bill," the repairman said. "Only maybe we better just charge it up to customer relations."

The letters remained steady on the screen, and Mr. Rapp studied them. They were right side up.

"You fixed it," Mr. Rapp said, a little uncertainly. "I mean, it's working. I ought to pay...."

"I goofed," the repairman said. He picked up his tools, and moved toward the door. "Like, I won't mention it to anybody if you won't. But I goofed, all right. Didn't you see the picture?"

"But whatever you did ... it worked," Mr. Rapp said. "The picture's right side up."

"I know," the repairman said. "Only somewhere ... there's a studio that's upside down. I just goofed, Pops, that's all."

He closed the door behind him, leaving Mr. Rapp still staring at the immobile, right-side-up message on the glowing screen.

The End.

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Transcriber note: This etext was produced from Analog February 1963. Extensive research did not uncover any evidence that the U.S. copyright on this publication was renewed.

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THE BIG TRIP UP YONDER

<http://www.gutenberg.org/etext/30240>

By KURT VONNEGUT, JR.

_If it was good enough for your grandfather, forget it ... it is
much too good for anyone else!_

Gramps Ford, his chin resting on his hands, his hands on the crook of his cane, was staring irascibly at the five-foot television screen that dominated the room. On the screen, a news commentator was summarizing the day's happenings. Every thirty seconds or so, Gramps would jab the floor with his cane-tip and shout, "Hell, we did that a hundred years ago!"

Emerald and Lou, coming in from the balcony, where they had been seeking that 2185 A.D. rarity--privacy--were obliged to take seats in the back row, behind Lou's father and mother, brother and sister-in-law, son and daughter-in-law, grandson and wife, granddaughter and husband, great-grandson and wife, nephew and wife, grandnephew and wife, great-grandniece and husband, great-grandnephew and wife--and, of course, Gramps, who was in front of everybody. All save Gramps, who was somewhat withered and bent, seemed, by pre-anti-gerasone standards, to be about the same age--somewhere in their late twenties or early thirties. Gramps looked older because he had already reached 70 when anti-gerasone was invented. He had not aged in the 102 years since.

"Meanwhile," the commentator was saying, "Council Bluffs, Iowa, was still threatened by stark tragedy. But 200 weary rescue workers have refused to give up hope, and continue to dig in an effort to save Elbert Haggdorn, 183, who has been wedged for two days in a ..."

"I wish he'd get something more cheerful," Emerald whispered to Lou.

* * * * *

"Silence!" cried Gramps. "Next one shoots off his big bazoo while the TV's on is gonna find hisself cut off without a dollar--" his voice suddenly softened and sweetened--"when they wave that checkered flag at the Indianapolis Speedway, and old Gramps gets ready for the Big Trip Up Yonder."

He sniffed sentimentally, while his heirs concentrated desperately on not making the slightest sound. For them, the poignancy of the prospective Big Trip had been dulled somewhat, through having been mentioned by Gramps about once a day for fifty years.

"Dr. Brainard Keyes Bullard," continued the commentator, "President of Wyandotte College, said in an address tonight that most of the world's ills can be traced to the fact that Man's knowledge of himself has not kept pace with his knowledge of the physical world."

"_Hell!_" snorted Gramps. "We said _that_ a hundred years ago!"

"In Chicago tonight," the commentator went on, "a special celebration is taking place in the Chicago Lying-in Hospital. The guest of honor is Lowell W. Hitz, age zero. Hitz, born this morning, is the twenty-five-millionth child to be born in the hospital." The commentator faded, and was replaced on the screen by young Hitz, who squalled furiously.

"Hell!" whispered Lou to Emerald. "We said that a hundred years ago."

"I heard that!" shouted Gramps. He snapped off the television set and his petrified descendants stared silently at the screen. "You, there, boy--"

"I didn't mean anything by it, sir," said Lou, aged 103.

"Get me my will. You know where it is. You kids _all_ know where it is. Fetch, boy!" Gramps snapped his gnarled fingers sharply.

Lou nodded dully and found himself going down the hall, picking his way over bedding to Gramps' room, the only private room in the Ford apartment. The other rooms were the bathroom, the living room and the wide windowless hallway, which was originally intended to serve as a dining area, and which had a kitchenette in one end. Six mattresses and four sleeping bags were dispersed in the hallway and living room, and the daybed, in the living room, accommodated the eleventh couple, the favorites of the moment.

On Gramps' bureau was his will, smeared, dog-eared, perforated and blotched with hundreds of additions, deletions, accusations, conditions, warnings, advice and homely philosophy. The document was, Lou reflected, a fifty-year diary, all jammed onto two sheets--a garbled, illegible log of day after day of strife. This day, Lou would be disinherited for the eleventh time, and it would take him perhaps six months of impeccable behavior to regain the promise of a share in the estate. To say nothing of the daybed in the living room for Em and himself.

"Boy!" called Gramps.

"Coming, sir." Lou hurried back into the living room and handed Gramps the will.

"Pen!" said Gramps.

* * * * *

He was instantly offered eleven pens, one from each couple.

"Not _that_ leaky thing," he said, brushing Lou's pen aside. "Ah, _there's_ a nice one. Good boy, Willy." He accepted Willy's pen. That was the tip they had all been waiting for. Willy, then--Lou's father--was the new favorite.

Willy, who looked almost as young as Lou, though he was 142, did a poor job of concealing his pleasure. He glanced shyly at the daybed, which would become his, and from which Lou and Emerald would have to move back into the hall, back to the worst spot of all by the bathroom door.

Gramps missed none of the high drama he had authored and he gave his own familiar role everything he had. Frowning and running his finger along each line, as though he were seeing the will for the first time, he read aloud in a deep portentous monotone, like a bass note on a cathedral organ.

"I, Harold D. Ford, residing in Building 257 of Alden Village, New York City, Connecticut, do hereby make, publish and declare this to be my last Will and Testament, revoking any and all former wills and codicils by me at any time heretofore made." He blew his nose importantly and went on, not missing a word, and repeating many for emphasis--repeating in particular his ever-more-elaborate specifications for a funeral.

At the end of these specifications, Gramps was so choked with emotion that Lou thought he might have forgotten why he'd brought out the will in the first place. But Gramps heroically brought his powerful emotions under control and, after erasing for a full minute, began to write and speak at the same time. Lou could have spoken his lines for him, he had heard them so often.

"I have had many heartbreaks ere leaving this vale of tears for a better land," Gramps said and wrote. "But the deepest hurt of all has been dealt me by--" He looked around the group, trying to remember who the malefactor was.

Everyone looked helpfully at Lou, who held up his hand resignedly.

Gramps nodded, remembering, and completed the sentence--"my great-grandson, Louis J. Ford."

"Grandson, sir," said Lou.

"Don't quibble. You're in deep enough now, young man," said Gramps, but he made the change. And, from there, he went without a misstep through the phrasing of the disinheritance, causes for which were disrespectfulness and quibbling.

* * * * *

In the paragraph following, the paragraph that had belonged to everyone in the room at one time or another, Lou's name was scratched out and Willy's substituted as heir to the apartment and, the biggest plum of all, the double bed in the private bedroom.

"So!" said Gramps, beaming. He erased the date at the foot of the will and substituted a new one, including the time of day. "Well--time to watch the McGarvey Family." The McGarvey Family was a television serial that Gramps had been following since he was 60, or for a total of 112 years. "I can't wait to see what's going to happen next," he said.

Lou detached himself from the group and lay down on his bed of pain by the bathroom door. Wishing Em would join him, he wondered where she was.

He dozed for a few moments, until he was disturbed by someone stepping over him to get into the bathroom. A moment later, he heard a faint gurgling sound, as though something were being poured down the washbasin

drain. Suddenly, it entered his mind that Em had cracked up, that she was in there doing something drastic about Gramps.

"Em?" he whispered through the panel. There was no reply, and Lou pressed against the door. The worn lock, whose bolt barely engaged its socket, held for a second, then let the door swing inward.

"Morty!" gasped Lou.

Lou's great-grandnephew, Mortimer, who had just married and brought his wife home to the Ford menage, looked at Lou with consternation and surprise. Morty kicked the door shut, but not before Lou had glimpsed what was in his hand--Gramps' enormous economy-size bottle of anti-gerasone, which had apparently been half-emptied, and which Morty was refilling with tap water.

A moment later, Morty came out, glared defiantly at Lou and brushed past him wordlessly to rejoin his pretty bride.

Shocked, Lou didn't know what to do. He couldn't let Gramps take the mousetrapped anti-gerasone--but, if he warned Gramps about it, Gramps would certainly make life in the apartment, which was merely insufferable now, harrowing.

Lou glanced into the living room and saw that the Fords, Emerald among them, were momentarily at rest, relishing the botches that the McGarveys had made of _their_ lives. Stealthily, he went into the bathroom, locked the door as well as he could and began to pour the contents of Gramps' bottle down the drain. He was going to refill it with full-strength anti-gerasone from the 22 smaller bottles on the shelf.

The bottle contained a half-gallon, and its neck was small, so it seemed to Lou that the emptying would take forever. And the almost imperceptible smell of anti-gerasone, like Worcestershire sauce, now seemed to Lou, in his nervousness, to be pouring out into the rest of the apartment, through the keyhole and under the door.

* * * * *

The bottle gurgled monotonously. Suddenly, up came the sound of music from the living room and there were murmurs and the scraping of chair-legs on the floor. "Thus ends," said the television announcer, "the 29,121st chapter in the life of your neighbors and mine, the McGarveys." Footsteps were coming down the hall. There was a knock on the bathroom door.

"Just a sec," Lou cheerily called out. Desperately, he shook the big bottle, trying to speed up the flow. His palms slipped on the wet glass, and the heavy bottle smashed on the tile floor.

The door was pushed open, and Gramps, dumbfounded, stared at the incriminating mess.

Lou felt a hideous prickling sensation on his scalp and the back of his neck. He grinned engagingly through his nausea and, for want of anything remotely resembling a thought, waited for Gramps to speak.

"Well, boy," said Gramps at last, "looks like you've got a little

tidying up to do."

And that was all he said. He turned around, elbowed his way through the crowd and locked himself in his bedroom.

The Fords contemplated Lou in incredulous silence a moment longer, and then hurried back to the living room, as though some of his horrible guilt would taint them, too, if they looked too long. Morty stayed behind long enough to give Lou a quizzical, annoyed glance. Then he also went into the living room, leaving only Emerald standing in the doorway.

Tears streamed over her cheeks. "Oh, you poor lamb--_please_ don't look so awful! It was my fault. I put you up to this with my nagging about Gramps."

"No," said Lou, finding his voice, "really you didn't. Honest, Em, I was just--"

"You don't have to explain anything to me, hon. I'm on your side, no matter what." She kissed him on one cheek and whispered in his ear, "It wouldn't have been murder, hon. It wouldn't have killed him. It wasn't such a terrible thing to do. It just would have fixed him up so he'd be able to go any time God decided He wanted him."

"What's going to happen next, Em?" said Lou hollowly. "What's he going to do?"

* * * * *

Lou and Emerald stayed fearfully awake almost all night, waiting to see what Gramps was going to do. But not a sound came from the sacred bedroom. Two hours before dawn, they finally dropped off to sleep.

At six o'clock, they arose again, for it was time for their generation to eat breakfast in the kitchenette. No one spoke to them. They had twenty minutes in which to eat, but their reflexes were so dulled by the bad night that they had hardly swallowed two mouthfuls of egg-type processed seaweed before it was time to surrender their places to their son's generation.

Then, as was the custom for whoever had been most recently disinherited, they began preparing Gramps' breakfast, which would presently be served to him in bed, on a tray. They tried to be cheerful about it. The toughest part of the job was having to handle the honest-to-God eggs and bacon and oleomargarine, on which Gramps spent so much of the income from his fortune.

"Well," said Emerald, "I'm not going to get all panicky until I'm sure there's something to be panicky about."

"Maybe he doesn't know what it was I busted," Lou said hopefully.

"Probably thinks it was your watch crystal," offered Eddie, their son, who was toying apathetically with his buckwheat-type processed sawdust cakes.

"Don't get sarcastic with your father," said Em, "and don't talk with your mouth full, either."

"I'd like to see anybody take a mouthful of this stuff and not say something," complained Eddie, who was 73. He glanced at the clock. "It's time to take Gramps his breakfast, you know."

"Yeah, it is, isn't it?" said Lou weakly. He shrugged. "Let's have the tray, Em."

"We'll both go."

Walking slowly, smiling bravely, they found a large semi-circle of long-faced Fords standing around the bedroom door.

Em knocked. "Gramps," she called brightly, "break-fast is rea-dy."

There was no reply and she knocked again, harder.

The door swung open before her fist. In the middle of the room, the soft, deep, wide, canopied bed, the symbol of the sweet by-and-by to every Ford, was empty.

A sense of death, as unfamiliar to the Fords as Zoroastrianism or the causes of the Sepoy Mutiny, stilled every voice, slowed every heart. Awed, the heirs began to search gingerly, under the furniture and behind the drapes, for all that was mortal of Gramps, father of the clan.

* * * * *

But Gramps had left not his Earthly husk but a note, which Lou finally found on the dresser, under a paperweight which was a treasured souvenir from the World's Fair of 2000. Unsteadily, Lou read it aloud:

"Somebody who I have sheltered and protected and taught the best I know how all these years last night turned on me like a mad dog and diluted my anti-gerasone, or tried to. I am no longer a young man. I can no longer bear the crushing burden of life as I once could. So, after last night's bitter experience, I say good-by. The cares of this world will soon drop away like a cloak of thorns and I shall know peace. By the time you find this, I will be gone."

"Gosh," said Willy brokenly, "he didn't even get to see how the 5000-mile Speedway Race was going to come out."

"Or the Solar Series," Eddie said, with large mournful eyes.

"Or whether Mrs. McGarvey got her eyesight back," added Morty.

"There's more," said Lou, and he began reading aloud again: "'I, Harold D. Ford, etc., do hereby make, publish and declare this to be my last Will and Testament, revoking any and all former wills and codicils by me at any time heretofore made.'"

"No!" cried Willy. "Not another one!"

"I do stipulate," read Lou, "that all of my property, of whatsoever kind and nature, not be divided, but do devise and bequeath it to be held in common by my issue, without regard for generation, equally, share and share alike."

"Issue?" said Emerald.

Lou included the multitude in a sweep of his hand. "It means we all own the whole damn shootin' match."

Each eye turned instantly to the bed.

"Share and share alike?" asked Morty.

"Actually," said Willy, who was the oldest one present, "it's just like the old system, where the oldest people head up things with their headquarters in here and--"

"I like _that_!" exclaimed Em. "Lou owns as much of it as you do, and I say it ought to be for the oldest one who's still working. You can snooze around here all day, waiting for your pension check, while poor Lou stumbles in here after work, all tuckered out, and--"

"How about letting somebody who's never had _any_ privacy get a little crack at it?" Eddie demanded hotly. "Hell, you old people had plenty of privacy back when you were kids. I was born and raised in the middle of that goddamn barracks in the hall! How about--"

"Yeah?" challenged Morty. "Sure, you've all had it pretty tough, and my heart bleeds for you. But try honeymooning in the hall for a real kick."

"_Silence!_" shouted Willy imperiously. "The next person who opens his mouth spends the next six months by the bathroom. Now clear out of my room. I want to think."

A vase shattered against the wall, inches above his head.

* * * * *

In the next moment, a free-for-all was under way, with each couple battling to eject every other couple from the room. Fighting coalitions formed and dissolved with the lightning changes of the tactical situation. Em and Lou were thrown into the hall, where they organized others in the same situation, and stormed back into the room.

After two hours of struggle, with nothing like a decision in sight, the cops broke in, followed by television cameramen from mobile units.

For the next half-hour, patrol wagons and ambulances hauled away Fords, and then the apartment was still and spacious.

An hour later, films of the last stages of the riot were being televised to 500,000,000 delighted viewers on the Eastern Seaboard.

In the stillness of the three-room Ford apartment on the 76th floor of Building 257, the television set had been left on. Once more the air was filled with the cries and grunts and crashes of the fray, coming harmlessly now from the loudspeaker.

The battle also appeared on the screen of the television set in the police station, where the Fords and their captors watched with professional interest.

Em and Lou, in adjacent four-by-eight cells, were stretched out peacefully on their cots.

"Em," called Lou through the partition, "you got a washbasin all your own, too?"

"Sure. Washbasin, bed, light--the works. And we thought _Gramps'_ room was something. How long has this been going on?" She held out her hand. "For the first time in forty years, hon, I haven't got the shakes--look at me!"

"Cross your fingers," said Lou. "The lawyer's going to try to get us a year."

"Gee!" Em said dreamily. "I wonder what kind of wires you'd have to pull to get put away in solitary?"

"All right, pipe down," said the turnkey, "or I'll toss the whole kit and caboodle of you right out. And first one who lets on to anybody outside how good jail is ain't never getting back in!"

The prisoners instantly fell silent.

* * * *

The living room of the apartment darkened for a moment as the riot scenes faded on the television screen, and then the face of the announcer appeared, like the Sun coming from behind a cloud. "And now, friends," he said, "I have a special message from the makers of anti-gerasone, a message for all you folks over 150. Are you hampered socially by wrinkles, by stiffness of joints and discoloration or loss of hair, all because these things came upon you before anti-gerasone was developed? Well, if you are, you need no longer suffer, need no longer feel different and out of things.

"After years of research, medical science has now developed _Super_-anti-gerasone! In weeks--yes, weeks--you can look, feel and act as young as your great-great-grandchildren! Wouldn't you pay \$5,000 to be indistinguishable from everybody else? Well, you don't have to. Safe, tested _Super_-anti-gerasone costs you only a few dollars a day.

"Write now for your free trial carton. Just put your name and address on a dollar postcard, and mail it to '_Super_', Box 500,000, Schenectady, N. Y. Have you got that? I'll repeat it. '_Super_', Box 500,000 ..."

Underlining the announcer's words was the scratching of Gramps' pen, the one Willy had given him the night before. He had come in, a few minutes earlier, from the Idle Hour Tavern, which commanded a view of Building 257 from across the square of asphalt known as the Alden Village Green. He had called a cleaning woman to come straighten the place up, then had hired the best lawyer in town to get his descendants a conviction, a genius who had never gotten a client less than a year and a day. Gramps had then moved the daybed before the television screen, so that he could watch from a reclining position. It was something he'd dreamed of doing for years.

"Schen-_ec_-ta-dy," murmured Gramps. "Got it!" His face had changed

remarkably. His facial muscles seemed to have relaxed, revealing kindness and equanimity under what had been taut lines of bad temper. It was almost as though his trial package of _Super_ -anti-gerasone had already arrived. When something amused him on television, he smiled easily, rather than barely managing to lengthen the thin line of his mouth a millimeter.

Life was good. He could hardly wait to see what was going to happen next.

--KURT VONNEGUT, JR.

Transcriber's Note:

This etext was produced from _Galaxy Science Fiction_ January 1954. Extensive research did not uncover any evidence that the U.S. copyright on this publication was renewed. Minor spelling and typographical errors have been corrected without note.

SCIENCE FACT

THE EINSTEIN THEORY OF RELATIVITY

<http://www.gutenberg.org/ebooks/11335>

A Concise Statement by Prof. H. A. Lorentz, of the University of Leyden

The total eclipse of the sun of May 29, resulted in a striking confirmation of the new theory of the universal attractive power of gravitation developed by Albert Einstein, and thus reinforced the conviction that the defining of this theory is one of the most important steps ever taken in the domain of natural science. In response to a request by the editor, I will attempt to contribute something to its general appreciation in the following lines.

For centuries Newton's doctrine of the attraction of gravitation has been the most prominent example of a theory of natural science. Through the simplicity of its basic idea, an attraction between two bodies proportionate to their mass and also proportionate to the square of the distance; through the completeness with which it explained so many of the peculiarities in the movement of the bodies making up the solar system; and, finally, through its universal validity, even in the case of the far-distant planetary systems, it compelled the admiration of all.

But, while the skill of the mathematicians was devoted to making more exact calculations of the consequences to which it led, no real progress was made in the science of gravitation. It is true that the inquiry was transferred to the field of physics, following Cavendish's success in demonstrating the common attraction between bodies with which laboratory work can be done, but it always was evident that natural philosophy had no grip on the universal power of attraction. While in electric effects an influence exercised by the matter placed between bodies was speedily observed--the

starting-point of a new and fertile doctrine of electricity--in the case of gravitation not a trace of an influence exercised by intermediate matter could ever be discovered. It was, and remained, inaccessible and unchangeable, without any connection, apparently, with other phenomena of natural philosophy.

Einstein has put an end to this isolation; it is now well established that gravitation affects not only matter, but also light. Thus strengthened in the faith that his theory already has inspired, we may assume with him that there is not a single physical or chemical phenomenon--which does not feel, although very probably in an unnoticeable degree, the influence of gravitation, and that, on the other side, the attraction exercised by a body is limited in the first place by the quantity of matter it contains and also, to some degree, by motion and by the physical and chemical condition in which it moves.

It is comprehensible that a person could not have arrived at such a far-reaching change of view by continuing to follow the old beaten paths, but only by introducing some sort of new idea. Indeed, Einstein arrived at his theory through a train of thought of great originality. Let me try to restate it in concise terms.

THE EARTH AS A MOVING CAR

Everyone knows that a person may be sitting in any kind of a vehicle without noticing its progress, so long as the movement does not vary in direction or speed; in a car or a fast express train objects fall in just the same way as in a coach that is standing still. Only when we look at objects outside the train, or when the air can enter the car, do we notice indications of the motion. We may compare the earth with such a moving vehicle, which in its course around the sun has a remarkable speed, of which the direction and velocity during a considerable period of time may be regarded as constant. In place of the air now comes, so it was reasoned formerly, the ether which fills the spaces of the universe and is the carrier of light and of electro-magnetic phenomena; there were good reasons to assume that the earth was entirely permeable for the ether and could travel through it without setting it in motion. So here was a case comparable with that of a railroad coach open on all sides. There certainly should have been a powerful "ether wind" blowing through the earth and all our instruments, and it was to have been expected that some signs of it would be noticed in connection with some experiment or other. Every attempt along that line, however, has remained fruitless; all the phenomena examined were evidently independent of the motion of the earth. That this is the way they do function was brought to the front by Einstein in his first or "special" theory of relativity. For him the ether does not function and in the sketch that he draws of natural phenomena there is no mention of that intermediate matter.

If the spaces of the universe are filled with an ether, let us suppose with a substance, in which, aside from eventual vibrations and other slight movements, there is never any crowding or flowing of one part alongside of another, then we can imagine fixed points existing in it; for example, points in a straight line, located one meter apart, points in a level plain, like the angles or squares on a chess board extending out into infinity, and finally, points in space as they are obtained

by repeatedly shifting that level spot a distance of a meter in the direction perpendicular to it. If, consequently, one of the points is chosen as an "original point" we can, proceeding from that point, reach any other point through three steps in the common perpendicular directions in which the points are arranged. The figures showing how many meters are comprized in each of the steps may serve to indicate the place reached and to distinguish it from any other; these are, as is said, the "co-ordinates" of these places, comparable, for example, with the numbers on a map giving the longitude and latitude. Let us imagine that each point has noted upon it the three numbers that give its position, then we have something comparable with a measure with numbered subdivisions; only we now have to do, one might say, with a good many imaginary measures in three common perpendicular directions. In this "system of co-ordinates" the numbers that fix the position of one or the other of the bodies may now be read off at any moment.

This is the means which the astronomers and their mathematical assistants have always used in dealing with the movement of the heavenly bodies. At a determined moment the position of each body is fixed by its three co-ordinates. If these are given, then one knows also the common distances, as well as the angles formed by the connecting lines, and the movement of a planet is to be known as soon as one knows how its co-ordinates are changing from one moment to the other. Thus the picture that one forms of the phenomena stands there as if it were sketched on the canvas of the motionless ether.

EINSTEIN'S DEPARTURE

Since Einstein has cut loose from the ether, he lacks this canvas, and therewith, at the first glance, also loses the possibility of fixing the positions of the heavenly bodies and mathematically describing their movement--i.e., by giving comparisons that define the positions at every moment. How Einstein has overcome this difficulty may be somewhat elucidated through a simple illustration.

On the surface of the earth the attraction of gravitation causes all bodies to fall along vertical lines, and, indeed, when one omits the resistance of the air, with an equally accelerated movement; the velocity increases in equal degrees in equal consecutive divisions of time at a rate that in this country gives the velocity attained at the end of a second as 981 centimeters (32.2 feet) per second. The number 981 defines the "acceleration in the field of gravitation," and this field is fully characterized by that single number; with its help we can also calculate the movement of an object hurled out in an arbitrary direction. In order to measure the acceleration we let the body drop alongside of a vertical measure set solidly on the ground; on this scale we read at every moment the figure that indicates the height, the only co-ordinate that is of importance in this rectilinear movement. Now we ask what would we be able to see if the measure were not bound solidly to the earth, if it, let us suppose, moved down or up with the place where it is located and where we are ourselves. If in this case the speed were constant, then, and this is in accord with the special theory of relativity, there would be no motion observed at all; we should again find an acceleration of 981 for a falling body. It would be different if the measure moved with changeable velocity.

If it went down with a constant acceleration of 981 itself, then an

object could remain permanently at the same point on the measure, or could move up or down itself alongside of it, with constant speed. The relative movement of the body with regard to the measure should be without acceleration, and if we had to judge only by what we observed in the spot where we were and which was falling itself, then we should get the impression that there was no gravitation at all. If the measure goes down with an acceleration equal to a half or a third of what it just was, then the relative motion of the body will, of course, be accelerated, but we should find the increase in velocity per second one-half or two-thirds of 981. If, finally, we let the measure rise with a uniformly accelerated movement, then we shall find a greater acceleration than 981 for the body itself.

Thus we see that we, also when the measure is not attached to the earth, disregarding its displacement, may describe the motion of the body in respect to the measure always in the same way--i.e., as one uniformly accelerated, as we ascribe now and again a fixed value to the acceleration of the sphere of gravitation, in a particular case the value of zero.

Of course, in the case here under consideration the use of a measure fixed immovably upon the earth should merit all recommendation. But in the spaces of the solar system we have, now that we have abandoned the ether, no such support. We can no longer establish a system of co-ordinates, like the one just mentioned, in a universal intermediate matter, and if we were to arrive in one way or another at a definite system of lines crossing each other in three directions, then we should be able to use just as well another similar system that in respect to the first moves this or that way. We should also be able to remodel the system of co-ordinates in all kinds of ways, for example by extension or compression. That in all these cases for fixed bodies that do not participate in the movement or the remodelling of the system other co-ordinates will be read off again and again is clear.

NEW SYSTEM OR CO-ORDINATES

What way Einstein had to follow is now apparent. He must--this hardly needs to be said--in calculating definite, particular cases make use of a chosen system of co-ordinates, but as he had no means of limiting his choice beforehand and in general, he had to reserve full liberty of action in this respect. Therefore he made it his aim so to arrange the theory that, no matter how the choice was made, the phenomena of gravitation, so far as its effects and its stimulation by the attracting bodies are concerned, may always be described in the same way--i.e., through comparisons of the same general form, as we again and again give certain values to the numbers that mark the sphere of gravitation. (For the sake of simplification I here disregard the fact that Einstein desires that also the way in which time is measured and represented by figures shall have no influence upon the central value of the comparisons.)

Whether this aim could be attained was a question of mathematical inquiry. It really was attained, remarkably enough, and, we may say, to the surprise of Einstein himself, although at the cost of considerable simplicity in the mathematical form; it appeared necessary for the fixation of the field of gravitation in one or the other point in space to introduce no fewer than ten quantities in the place of the one that occurred in the example mentioned above.

In this connection it is of importance to note that when we exclude certain possibilities that would give rise to still greater intricacy, the form of comparison used by Einstein to present the theory is the only possible one; the principle of the freedom of choice in co-ordinates was the only one by which he needed to allow himself to be guided. Although thus there was no special effort made to reach a connection with the theory of Newton, it was evident, fortunately, at the end of the experiment that the connection existed. If we avail ourselves of the simplifying circumstance that the velocities of the heavenly bodies are slight in comparison with that of light, then we can deduce the theory of Newton from the new theory, the "universal" relativity theory, as it is called by Einstein. Thus all the conclusions based upon the Newtonian theory hold good, as must naturally be required. But now we have got further along. The Newtonian theory can no longer be regarded as absolutely correct in all cases; there are slight deviations from it, which, although as a rule unnoticeable, once in a while fall within the range of observation.

Now, there was a difficulty in the movement of the planet Mercury which could not be solved. Even after all the disturbances caused by the attraction of other planets had been taken into account, there remained an inexplicable phenomenon--i.e., an extremely slow turning of the ellipsis described by Mercury on its own plane; Leverrier had found that it amounted to forty-three seconds a century. Einstein found that, according to his formulas, this movement must really amount to just that much. Thus with a single blow he solved one of the greatest puzzles of astronomy.

Still more remarkable, because it has a bearing upon a phenomenon which formerly could not be imagined, is the confirmation of Einstein's prediction regarding the influence of gravitation upon the course of the rays of light. That such an influence must exist is taught by a simple examination; we have only to turn back for a moment to the following comparison in which we were just imagining ourselves to make our observations. It was noted that when the compartment is falling with the acceleration of 981 the phenomena therein will occur just as if there were no attraction of gravitation. We can then see an object, A, stand still somewhere in open space. A projectile, B, can travel with constant speed along a horizontal line, without varying from it in the slightest.

A ray of light can do the same; everybody will admit that in each case, if there is no gravitation, light will certainly extend itself in a rectilinear way. If we limit the light to a flicker of the slightest duration, so that only a little bit, C, of a ray of light arises, or if we fix our attention upon a single vibration of light, C, while we on the other hand give to the projectile, B, a speed equal to that of light, then we can conclude that B and C in their continued motion can always remain next to each other. Now if we watch all this, not from the movable compartment, but from a place on the earth, then we shall note the usual falling movement of object A, which shows us that we have to deal with a sphere of gravitation. The projectile B will, in a bent path, vary more and more from a horizontal straight line, and the light will do the same, because if we observe the movements from another standpoint this can have no effect upon the remaining next to each other of B and C.

DEFLECTION OF LIGHT

The bending of a ray of light thus described is much too light on the surface of the earth to be observed. But the attraction of gravitation exercised by the sun on its surface is, because of its great mass, more than twenty-seven times stronger, and a ray of light that goes close by the superficies of the sun must surely be noticeably bent. The rays of a star that are seen at a short distance from the edge of the sun will, going along the sun, deviate so much from the original direction that they strike the eye of an observer as if they came in a straight line from a point somewhat further removed than the real position of the star from the sun. It is at that point that we think we see the star; so here is a seeming displacement from the sun, which increases in the measure in which the star is observed closer to the sun. The Einstein theory teaches that the displacement is in inverse proportion to the apparent distance of the star from the centre of the sun, and that for a star just on its edge it will amount to $1''.75$ (1.75 seconds). This is approximately the thousandth part of the apparent diameter of the sun.

Naturally, the phenomenon can only be observed when there is a total eclipse of the sun; then one can take photographs of neighboring stars and through comparing the plate with a picture of the same part of the heavens taken at a time when the sun was far removed from that point the sought-for movement to one side may become apparent.

Thus to put the Einstein theory to the test was the principal aim of the English expeditions sent out to observe the eclipse of May 29, one to Prince's Island, off the coast of Guinea, and the other to Sobral, Brazil. The first-named expedition's observers were Eddington and Cottingham, those of the second, Crommelin and Davidson. The conditions were especially favorable, for a very large number of bright stars were shown on the photographic plate; the observers at Sobral being particularly lucky in having good weather.

The total eclipse lasted five minutes, during four of which it was perfectly clear, so that good photographs could be taken. In the report issued regarding the results the following figures, which are the average of the measurements made from the seven plates, are given for the displacements of seven stars:

$1''.02$, $0''.92$, $0''.84$, $0''.58$, $0''.54$, $0''.36$, $0''.24$, whereas, according to the theory, the displacements should have amounted to: $0''.88$, $0''.80$, $0''.75$, $0''.40$, $0''.52$, $0''.33$, $0''.20$.

If we consider that, according to the theory the displacements must be in inverse ratio to the distance from the centre of the sun, then we may deduce from each observed displacement how great the sideways movement for a star at the edge of the sun should have been. As the most probable result, therefore, the number $1''.98$ was found from all the observations together. As the last of the displacements given above--i.e., $0''.24$ is about one-eighth of this, we may say that the influence of the attraction of the sun upon light made itself felt upon the ray at a distance eight times removed from its centre.

The displacements calculated according to the theory are, just because of the way in which they are calculated, in inverse proportion to the distance to the centre. Now that the observed deviations also accord with the same rule, it follows that they are surely proportionate

with the calculated displacements. The proportion of the first and the last observed sidewise movements is 4.2, and that of the two most extreme of the calculated numbers is 4.4.

This result is of importance, because thereby the theory is excluded, or at least made extremely improbable, that the phenomenon of refraction is to be ascribed to, a ring of vapor surrounding the sun for a great distance. Indeed, such a refraction should cause a deviation in the observed direction, and, in order to produce the displacement of one of the stars under observation itself a slight proximity of the vapor ring should be sufficient, but we have every reason to expect that if it were merely a question of a mass of gas around the sun the diminishing effect accompanying a removal from the sun should manifest itself much faster than is really the case. We cannot speak with perfect certainty here, as all the factors that might be of influence upon the distribution of density in a sun atmosphere are not well enough known, but we can surely demonstrate that in case one of the gasses with which we are acquainted were held in equilibrium solely by the influence of attraction of the sun the phenomenon should become much less as soon as we got somewhat further from the edge of the sun. If the displacement of the first star, which amounts to 1.02-seconds were to be ascribed to such a mass of gas, then the displacement of the second must already be entirely inappreciable.

So far as the absolute extent of the displacements is concerned, it was found somewhat too great, as has been shown by the figures given above; it also appears from the final result to be 1.98 for the edge of the sun--i.e., 13 per cent, greater than the theoretical value of 1.75. It indeed seems that the discrepancies may be ascribed to faults in observations, which supposition is supported by the fact that the observations at Prince's Island, which, it is true, did not turn out quite as well as those mentioned above, gave the result, of 1.64, somewhat lower than Einstein's figure.

(The observations made with a second instrument at Sobral gave a result of 0.93, but the observers are of the opinion that because of the shifting of the mirror which reflected the rays no value is to be attached to it.)

DIFFICULTY EXAGGERATED

During a discussion of the results obtained at a joint meeting of the Royal Society and the Royal Astronomical Society held especially for that purpose recently in London, it was the general opinion that Einstein's prediction might be regarded as justified, and warm tributes to his genius were made on all sides. Nevertheless, I cannot refrain, while I am mentioning it, from expressing my surprise that, according to the report in The Times there should be so much complaint about the difficulty of understanding the new theory. It is evident that Einstein's little book "About the Special and the General Theory of Relativity in Plain Terms," did not find its way into England during wartime. Any one reading it will, in my opinion, come to the conclusion that the basic ideas of the theory are really clear and simple; it is only to be regretted that it was impossible to avoid clothing them in pretty involved mathematical terms, but we must not worry about that.

I allow myself to add that, as we follow Einstein, we may retain much of what has been formerly gained. The Newtonian theory remains

in its full value as the first great step, without which one cannot imagine the development of astronomy and without which the second step, that has now been made, would hardly have been possible. It remains, moreover, as the first, and in most cases, sufficient, approximation. It is true that, according to Einstein's theory, because it leaves us entirely free as to the way in which we wish to represent the phenomena, we can imagine an idea of the solar system in which the planets follow paths of peculiar form and the rays of light shine along sharply bent lines--think of a twisted and distorted planetarium--but in every case where we apply it to concrete questions we shall so arrange it that the planets describe almost exact ellipses and the rays of light almost straight lines.

It is not necessary to give up entirely even the ether. Many natural philosophers find satisfaction in the idea of a material intermediate substance in which the vibrations of light take place, and they will very probably be all the more inclined to imagine such a medium when they learn that, according to the Einstein theory, gravitation itself does not spread instantaneously, but with a velocity that at the first estimate may be compared with that of light. Especially in former years were such interpretations current and repeated attempts were made by speculations about the nature of the ether and about the mutations and movements that might take place in it to arrive at a clear presentation of electro-magnetic phenomena, and also of the functioning of gravitation. In my opinion it is not impossible that in the future this road, indeed abandoned at present, will once more be followed with good results, if only because it can lead to the thinking out of new experimental tests. Einstein's theory need not keep us from so doing; only the ideas about the ether must accord with it.

Nevertheless, even without the color and clearness that the ether theories and the other models may be able to give, and even, we can feel it this way, just because of the soberness induced by their absence, Einstein's work, we may now positively expect, will remain a monument of science; his theory entirely fulfills the first and principal demand that we may make, that of deducing the course of phenomena from certain principles exactly and to the smallest details. It was certainly fortunate that he himself put the ether in the background; if he had not done so, he probably would never have come upon the idea that has been the foundation of all his examinations.

Thanks to his indefatigable exertions and perseverance, for he had great difficulties to overcome in his attempts, Einstein has attained the results, which I have tried to sketch, while still young; he is now 45 years old. He completed his first investigations in Switzerland, where he first was engaged in the Patent Bureau at Berne and later as a professor at the Polytechnic in Zurich. After having been a professor for a short time at the University of Prague, he settled in Berlin, where the Kaiser Wilhelm Institute afforded him the opportunity to devote himself exclusively to his scientific work. He repeatedly visited our country and made his Netherland colleagues, among whom he counts many good friends, partners in his studies and his results. He attended the last meeting of the department of natural philosophy of the Royal Academy of Sciences, and the members then had the privilege of hearing him explain, in his own fascinating, clear and simple way, his interpretations of the fundamental questions to which his theory gives rise.

Forrest J. Ackerman, prominent Los Angeles agent and Science Fiction enthusiast, reports on the recent World Convention in New York. Mr. Ackerman, who attended the first World Convention seventeen years ago, has been prominent in SF circles since the early thirties.

Out of this world convention

by FORREST J. ACKERMAN
<http://www.gutenberg.org/ebooks/28535>

An eye-witness account of the 14th World
Science Fiction Convention in session.

I was a spy for the FBI--the Fantasy Bureau of Investigation! Learning of a monster meeting of science fiction "fen" in New York, I teleported myself 3,000 miles from the Pacificoast to check the facts on the monsters. And it was true--the 14th World SciFi Con was tremonstrous.

* * * * *

In all seriousness, the _Newyorcon_ was one of the greatest aggregations of s.f. enthusiasts I have ever seen. A far cry from the _Nycon_, the _first_ "world" s.f. con of 17 years before, when the turnout of 125 was considered colossal. Now more than twelve hundred fans, authors, editors, artists, publishers, agents, anthologists, reviewers and readers of science fiction and fantasy registered for the Labor Day Weekend gathering of the clans, a conclave of the slans.

From 37 of the 48 states they came. And from Canada, Cuba, England, Germany, India, Israel and the West Indies. The roll call of celebrities read like the Who's Who of S.F. Prodom: Theodore Sturgeon, Isaac Asimov, Fritz Leiber, Willy Ley, Nelson Bond, John W. Campbell Jr., L. Sprague de Camp, James Blish, Judith Merril, "Ted" Carnell (Editor of New Worlds), Kelly Freas, Edmond Hamilton, Leigh Brackett, Anthony Boucher, William Tenn, James E. Gunn, Frank Belknap Long Jr., and numerous others, including Guest of Honor Arthur C. Clarke.

A standing ovation was given Arthur Clarke before and after his speech at the Banquet, a serious address that lasted forty-five minutes and covered many philosophical facets of the s.f. field. Especially rousing hands were given two of the real old-timers present, artist Frank R. Paul (Guest of Honor of the first Convention), and--out of the Ark--the man who once was an assistant to Thomas Alva Edison, the pioneer novelist of scientific romances and the man who discovered the Golden Atom--Ray Cummings. World famous cartoonist Al Capp gave a hilarious speech at the Banquet Sunday night, other large laughs being garnered on the occasion by Isaac Asimov and Anthony Boucher, Robert Bloch again proving that he has no peer as a Master of Ceremonies.

The Masquerade Ball was filmed for televising, and was a sight for bugging eyes. Extraterrestrial glamour girls came in spectromatic colors: one, Ruth Landis of Venus (formerly Nuyok), was a verdant

beauty, fresh as a breath of chlorophyll; while tall Tam Otteson, a recent import from England, had the judges agreeing that just looking at her was an education. Olga Ley won for the Most Beautiful costume, and Jos Christoff--a survivor from the first convention of them all--was another prize winner. Monsters, mutants, scientists, spacemen, aliens, and assorted "Things" thronged the ballroom floor as the flashbulbs popped.

John Campbell lectured on and demonstrated his controversial psionic Hieronymus machine, and famous fans sprang from der vood-work out--Sam Moskowitz, James Taurasi, Bob Tucker, Julius Unger, Raymond Van Houten, Allen Glasser ...

David Kyle, E. E. Evans, James Taurasi, myself and 2 others were elected Directors of the World Science Fiction Society.

No account of the Newyorcon could be complete without a deep bow of appreciation to the altruistic trio of committeemen (including one comely woman) who all but destroyed themselves engineering the Convention: David A. Kyle, Ruth Landis and Dick Ellington.

By a vote of 3 to 1, London was selected as the site of the 15th Con, to be held in '57. For an unforgettable experience in the fantastic universe of science fiction enthusiasts, plan now to attend the LONCON!

Transcriber's Note:

This etext was produced from Fantastic Universe January 1957. Extensive research did not uncover any evidence that the U.S. copyright on this publication was renewed. Minor spelling and typographical errors have been corrected without note.

The Leech

by Phillips Barbee

A visitor should be fed, but
this one could eat you out of
house and home ... literally!_

The leech was waiting for food. For millennia it had been drifting across the vast emptiness of space. Without consciousness, it had spent the countless centuries in the void between the stars. It was unaware when it finally reached a sun. Life-giving radiation flared around the hard, dry spore. Gravitation tugged at it.

A planet claimed it, with other stellar debris, and the leech fell, still dead-seeming within its tough spore case.

One speck of dust among many, the winds blew it around the Earth, played with it, and let it fall.

On the ground, it began to stir. Nourishment soaked in, permeating the spore case. It grew--and fed.

* * * * *

Frank Conners came up on the porch and coughed twice. "Say, pardon me, Professor," he said.

The long, pale man didn't stir from the sagging couch. His horn-rimmed glasses were perched on his forehead, and he was snoring very gently.

"I'm awful sorry to disturb you," Conners said, pushing back his battered felt hat. "I know it's your restin' week and all, but there's something damned funny in the ditch."

The pale man's left eyebrow twitched, but he showed no other sign of having heard.

Frank Conners coughed again, holding his spade in one purple-veined hand. "Didja hear me, Professor?"

"Of course I heard you," Micheals said in a muffled voice, his eyes still closed. "You found a pixie."

"A what?" Conners asked, squinting at Micheals.

"A little man in a green suit. Feed him milk, Conners."

"No, sir. I think it's a rock."

Micheals opened one eye and focused it in Conners' general direction.

"I'm awfully sorry about it," Conners said. Professor Micheals' resting week was a ten-year-old custom, and his only eccentricity. All winter Micheals taught anthropology, worked on half a dozen committees, dabbled in physics and chemistry, and still found time to write a book a year. When summer came, he was tired.

Arriving at his worked-out New York State farm, it was his invariable rule to do absolutely nothing for a week. He hired Frank Conners to cook for that week and generally make himself useful, while Professor Micheals slept.

During the second week, Micheals would wander around, look at the trees and fish. By the third week he would be getting a tan, reading, repairing the sheds and climbing mountains. At the end of four weeks, he could hardly wait to get back to the city.

But the resting week was sacred.

"I really wouldn't bother you for anything small," Conners said apologetically. "But that damned rock melted two inches off my spade."

Micheals opened both eyes and sat up. Conners held out the spade. The rounded end was sheared cleanly off. Micheals swung himself off the couch and slipped his feet into battered moccasins.

"Let's see this wonder," he said.

* * * * *

The object was lying in the ditch at the end of the front lawn, three

feet from the main road. It was round, about the size of a truck tire, and solid throughout. It was about an inch thick, as far as he could tell, grayish black and intricately veined.

"Don't touch it," Conners warned.

"I'm not going to. Let me have your spade." Micheals took the spade and prodded the object experimentally. It was completely unyielding. He held the spade to the surface for a moment, then withdrew it. Another inch was gone.

Micheals frowned, and pushed his glasses tighter against his nose. He held the spade against the rock with one hand, the other held close to the surface. More of the spade disappeared.

"Doesn't seem to be generating heat," he said to Conners. "Did you notice any the first time?"

Conners shook his head.

Micheals picked up a clod of dirt and tossed it on the object. The dirt dissolved quickly, leaving no trace on the gray-black surface. A large stone followed the dirt, and disappeared in the same way.

"Isn't that just about the damndest thing you ever saw, Professor?" Conners asked.

"Yes," Micheals agreed, standing up again. "It just about is."

He hefted the spade and brought it down smartly on the object. When it hit, he almost dropped the spade. He had been gripping the handle rigidly, braced for a recoil. But the spade struck that unyielding surface and stayed. There was no perceptible give, but absolutely no recoil.

"Whatcha think it is?" Conners asked.

"It's no stone," Micheals said. He stepped back. "A leech drinks blood. This thing seems to be drinking dirt. And spades." He struck it a few more times, experimentally. The two men looked at each other. On the road, half a dozen Army trucks rolled past.

"I'm going to phone the college and ask a physics man about it," Micheals said. "Or a biologist. I'd like to get rid of that thing before it spoils my lawn."

They walked back to the house.

* * * * *

Everything fed the leech. The wind added its modicum of kinetic energy, ruffling across the gray-black surface. Rain fell, and the force of each individual drop added to its store. The water was sucked in by the all-absorbing surface.

The sunlight above it was absorbed, and converted into mass for its body. Beneath it, the soil was consumed, dirt, stones and branches broken down by the leech's complex cells and changed into energy. Energy

was converted back into mass, and the leech grew.

Slowly, the first flickers of consciousness began to return. Its first realization was of the impossible smallness of its body.

It grew.

* * * * *

When Micheals looked the next day, the leech was eight feet across, sticking out into the road and up the side of the lawn. The following day it was almost eighteen feet in diameter, shaped to fit the contour of the ditch, and covering most of the road. That day the sheriff drove up in his model A, followed by half the town.

"Is that your leech thing, Professor Micheals?" Sheriff Flynn asked.

"That's it," Micheals said. He had spent the past days looking unsuccessfully for an acid that would dissolve the leech.

"We gotta get it out of the road," Flynn said, walking truculently up to the leech. "Something like this, you can't let it block the road, Professor. The Army's gotta use this road."

"I'm terribly sorry," Micheals said with a straight face. "Go right ahead, Sheriff. But be careful. It's hot." The leech wasn't hot, but it seemed the simplest explanation under the circumstances.

Micheals watched with interest as the sheriff tried to shove a crowbar under it. He smiled to himself when it was removed with half a foot of its length gone.

The sheriff wasn't so easily discouraged. He had come prepared for a stubborn piece of rock. He went to the rumble seat of his car and took out a blowtorch and a sledgehammer, ignited the torch and focused it on one edge of the leech.

After five minutes, there was no change. The gray didn't turn red or even seem to heat up. Sheriff Flynn continued to bake it for fifteen minutes, then called to one of the men.

"Hit that spot with the sledge, Jerry."

Jerry picked up the sledgehammer, motioned the sheriff back, and swung it over his head. He let out a howl as the hammer struck unyieldingly. There wasn't a fraction of recoil.

In the distance they heard the roar of an Army convoy.

"Now we'll get some action," Flynn said.

* * * * *

Micheals wasn't so sure. He walked around the periphery of the leech, asking himself what kind of substance would react that way. The answer was easy--no substance. No _known_ substance.

The driver in the lead jeep held up his hand, and the long convoy ground

to a halt. A hard, efficient-looking officer stepped out of the jeep. From the star on either shoulder, Micheals knew he was a brigadier general.

"You can't block this road," the general said. He was a tall, spare man in suntans, with a sunburned face and cold eyes. "Please clear that thing away."

"We can't move it," Micheals said. He told the general what had happened in the past few days.

"It must be moved," the general said. "This convoy must go through." He walked closer and looked at the leech. "You say it can't be jacked up by a crowbar? A torch won't burn it?"

"That's right," Micheals said, smiling faintly.

"Driver," the general said over his shoulder. "Ride over it."

Micheals started to protest, but stopped himself. The military mind would have to find out in its own way.

The driver put his jeep in gear and shot forward, jumping the leech's four-inch edge. The jeep got to the center of the leech and stopped.

"I didn't tell you to stop!" the general bellowed.

"I didn't, sir!" the driver protested.

The jeep had been yanked to a stop and had stalled. The driver started it again, shifted to four-wheel drive, and tried to ram forward. The jeep was fixed immovably, as though set in concrete.

"Pardon me," Micheals said. "If you look, you can see that the tires are melting down."

The general stared, his hand creeping automatically toward his pistol belt. Then he shouted, "Jump, driver! Don't touch that gray stuff."

White-faced, the driver climbed to the hood of his jeep, looked around him, and jumped clear.

There was complete silence as everyone watched the jeep. First its tires melted down, and then the rims. The body, resting on the gray surface, melted, too.

The aerial was the last to go.

The general began to swear softly under his breath. He turned to the driver. "Go back and have some men bring up hand grenades and dynamite."

The driver ran back to the convoy.

"I don't know what you've got here," the general said. "But it's not going to stop a U.S. Army convoy."

Micheals wasn't so sure.

* * * * *

The leech was nearly awake now, and its body was calling for more and more food. It dissolved the soil under it at a furious rate, filling it in with its own body, flowing outward.

A large object landed on it, and that became food also. Then suddenly--

A burst of energy against its surface, and then another, and another. It consumed them gratefully, converting them into mass. Little metal pellets struck it, and their kinetic energy was absorbed, their mass converted. More explosions took place, helping to fill the starving cells.

It began to sense things--controlled combustion around it, vibrations of wind, mass movements.

There was another, greater explosion, a taste of _real_ food! Greedily it ate, growing faster. It waited anxiously for more explosions, while its cells screamed for food.

But no more came. It continued to feed on the soil and on the Sun's energy. Night came, noticeable for its lesser energy possibilities, and then more days and nights. Vibrating objects continued to move around it.

It ate and grew and flowed.

* * * * *

Micheals stood on a little hill, watching the dissolution of his house. The leech was several hundred yards across now, lapping at his front porch.

Good-by, home, Micheals thought, remembering the ten summers he had spent there.

The porch collapsed into the body of the leech. Bit by bit, the house crumpled.

The leech looked like a field of lava now, a blasted spot on the green Earth.

"Pardon me, sir," a soldier said, coming up behind him. "General O'Donnell would like to see you."

"Right," Micheals said, and took his last look at the house.

He followed the soldier through the barbed wire that had been set up in a half-mile circle around the leech. A company of soldiers was on guard around it, keeping back the reporters and the hundreds of curious people who had flocked to the scene. Micheals wondered why he was still allowed inside. Probably, he decided, because most of this was taking place on his land.

The soldier brought him to a tent. Micheals stooped and went in. General O'Donnell, still in suntans, was seated at a small desk. He motioned Micheals to a chair.

"I've been put in charge of getting rid of this leech," he said to Micheals.

Micheals nodded, not commenting on the advisability of giving a soldier a scientist's job.

"You're a professor, aren't you?"

"Yes. Anthropology."

"Good. Smoke?" The general lighted Micheals' cigarette. "I'd like you to stay around here in an advisory capacity. You were one of the first to see this leech. I'd appreciate your observations on--" he smiled--"the enemy."

"I'd be glad to," Micheals said. "However, I think this is more in the line of a physicist or a biochemist."

"I don't want this place cluttered with scientists," General O'Donnell said, frowning at the tip of his cigarette. "Don't get me wrong. I have the greatest appreciation for science. I am, if I do say so, a scientific soldier. I'm always interested in the latest weapons. You can't fight any kind of a war any more without science."

* * * * *

O'Donnell's sunburned face grew firm. "But I can't have a team of longhairs poking around this thing for the next month, holding me up. My job is to destroy it, by any means in my power, and at once. I am going to do just that."

"I don't think you'll find it that easy," Micheals said.

"That's what I want you for," O'Donnell said. "Tell me why and I'll figure out a way of doing it."

"Well, as far as I can figure out, the leech is an organic mass-energy converter, and a frighteningly efficient one. I would guess that it has a double cycle. First, it converts mass into energy, then back into mass for its body. Second, energy is converted directly into the body mass. How this takes place, I do not know. The leech is not protoplasmic. It may not even be cellular--"

"So we need something big against it," O'Donnell interrupted. "Well, that's all right. I've got some big stuff here."

"I don't think you understand me," Micheals said. "Perhaps I'm not phrasing this very well. _The leech eats energy._ It can consume the strength of any energy weapon you use against it."

"What happens," O'Donnell asked, "if it keeps on eating?"

"I have no idea what its growth-limits are," Micheals said. "Its growth may be limited only by its food source."

"You mean it could continue to grow probably forever?"

"It could possibly grow as long as it had something to feed on."

"This is really a challenge," O'Donnell said. "That leech can't be totally impervious to force."

"It seems to be. I suggest you get some physicists in here. Some biologists also. Have them figure out a way of nullifying it."

The general put out his cigarette. "Professor, I cannot wait while scientists wrangle. There is an axiom of mine which I am going to tell you." He paused impressively. "Nothing is impervious to force. Muster enough force and anything will give. _Anything._

"Professor," the general continued, in a friendlier tone, "you shouldn't sell short the science you represent. We have, massed under North Hill, the greatest accumulation of energy and radioactive weapons ever assembled in one spot. Do you think your leech can stand the full force of them?"

"I suppose it's possible to overload the thing," Micheals said doubtfully. He realized now why the general wanted him around. He supplied the trappings of science, without the authority to override O'Donnell.

"Come with me," General O'Donnell said cheerfully, getting up and holding back a flap of the tent. "We're going to crack that leech in half."

* * * *

After a long wait, rich food started to come again, piped into one side of it. First there was only a little, and then more and more. Radiations, vibrations, explosions, solids, liquids--an amazing variety of edibles. It accepted them all. But the food was coming too slowly for the starving cells, for new cells were constantly adding their demands to the rest.

The ever-hungry body screamed for more food, faster!

Now that it had reached a fairly efficient size, it was fully awake. It puzzled over the energy-impressions around it, locating the source of the new food massed in one spot.

Effortlessly it pushed itself into the air, flew a little way and dropped on the food. Its super-efficient cells eagerly gulped the rich radioactive substances. But it did not ignore the lesser potentials of metal and clumps of carbohydrates.

* * * *

"The damned fools," General O'Donnell said. "Why did they have to panic? You'd think they'd never been trained." He paced the ground outside his tent, now in a new location three miles back.

The leech had grown to two miles in diameter. Three farming communities had been evacuated.

Micheals, standing beside the general, was still stupefied by the

memory. The leech had accepted the massed power of the weapons for a while, and then its entire bulk had lifted in the air. The Sun had been blotted out as it flew leisurely over North Hill, and dropped. There should have been time for evacuation, but the frightened soldiers had been blind with fear.

Sixty-seven men were lost in Operation Leech, and General O'Donnell asked permission to use atomic bombs. Washington sent a group of scientists to investigate the situation.

"Haven't those experts decided yet?" O'Donnell asked, halting angrily in front of the tent. "They've been talking long enough."

"It's a hard decision," Micheals said. Since he wasn't an official member of the investigating team, he had given his information and left. "The physicists consider it a biological matter, and the biologists seem to think the chemists should have the answer. No one's an expert on this, because it's never happened before. We just don't have the data."

"It's a military problem," O'Donnell said harshly. "I'm not interested in what the thing is--I want to know what can destroy it. They'd better give me permission to use the bomb."

Micheals had made his own calculations on that. It was impossible to say for sure, but taking a flying guess at the leech's mass-energy absorption rate, figuring in its size and apparent capacity for growth, an atomic bomb _might_ overload it--if used soon enough.

He estimated three days as the limit of usefulness. The leech was growing at a geometric rate. It could cover the United States in a few months.

"For a week I've been asking permission to use the bomb," O'Donnell grumbled. "And I'll get it, but not until after those jackasses end their damned talking." He stopped pacing and turned to Micheals. "I am going to destroy the leech. I am going to smash it, if that's the last thing I do. It's more than a matter of security now. It's personal pride."

That attitude might make great generals, Micheals thought, but it wasn't the way to consider this problem. It was anthropomorphic of O'Donnell to see the leech as an enemy. Even the identification, "leech," was a humanizing factor. O'Donnell was dealing with it as he would any physical obstacle, as though the leech were the simple equivalent of a large army.

But the leech was not human, not even of this planet, perhaps. It should be dealt with in its own terms.

"Here come the bright boys now," O'Donnell said.

* * * * *

From a nearby tent a group of weary men emerged, led by Allenson, a government biologist.

"Well," the general asked, "have you figured out what it is?"

"Just a minute, I'll hack off a sample," Allenson said, glaring through red-rimmed eyes.

"Have you figured out some _scientific_ way of killing it?"

"Oh, that wasn't too difficult," Moriarty, an atomic physicist, said wryly. "Wrap it in a perfect vacuum. That'll do the trick. Or blow it off the Earth with anti-gravity."

"But failing that," Allenson said, "we suggest you use your atomic bombs, and use them fast."

"Is that the opinion of your entire group?" O'Donnell asked, his eyes glittering.

"Yes."

The general hurried away. Micheals joined the scientists.

"He should have called us in at the very first," Allenson complained. "There's no time to consider anything but force now."

"Have you come to any conclusions about the nature of the leech?" Micheals asked.

"Only general ones," Moriarty said, "and they're about the same as yours. The leech is probably extraterrestrial in origin. It seems to have been in a spore-stage until it landed on Earth." He paused to light a pipe. "Incidentally, we should be damned glad it didn't drop in an ocean. We'd have had the Earth eaten out from under us before we knew what we were looking for."

They walked in silence for a few minutes.

"As you mentioned, it's a perfect converter--it can transform mass into energy, and any energy into mass." Moriarty grinned. "Naturally that's impossible and I have figures to prove it."

"I'm going to get a drink," Allenson said. "Anyone coming?"

"Best idea of the week," Micheals said. "I wonder how long it'll take O'Donnell to get permission to use the bomb."

"If I know politics," Moriarty said, "too long."

* * * * *

The findings of the government scientists were checked by other government scientists. That took a few days. Then Washington wanted to know if there wasn't some alternative to exploding an atomic bomb in the middle of New York State. It took a little time to convince them of the necessity. After that, people had to be evacuated, which took more time.

Then orders were made out, and five atomic bombs were checked out of a cache. A patrol rocket was assigned, given orders, and put under General O'Donnell's command. This took a day more.

Finally, the stubby scout rocket was winging its way over New York. From

the air, the grayish-black spot was easy to find. Like a festered wound, it stretched between Lake Placid and Elizabethtown, covering Keene and Keene Valley, and lapping at the edges of Jay.

The first bomb was released.

* * * * *

It had been a long wait after the first rich food. The greater radiation of day was followed by the lesser energy of night many times, as the leech ate away the earth beneath it, absorbed the air around it, and grew. Then one day--

An amazing burst of energy!

Everything was food for the leech, but there was always the possibility of choking. The energy poured over it, drenched it, battered it, and the leech grew frantically, trying to contain the titanic dose. Still small, it quickly reached its overload limit. The strained cells, filled to satiation, were given more and more food. The strangling body built new cells at lightning speed. And--

It held. The energy was controlled, stimulating further growth. More cells took over the load, sucking in the food.

The next doses were wonderfully palatable, easily handled. The leech overflowed its bounds, growing, eating, and growing.

That was a taste of real food! The leech was as near ecstasy as it had ever been. It waited hopefully for more, but no more came.

It went back to feeding on the Earth. The energy, used to produce more cells, was soon dissipated. Soon it was hungry again.

It would always be hungry.

* * * * *

O'Donnell retreated with his demoralized men. They camped ten miles from the leech's southern edge, in the evacuated town of Schroon Lake. The leech was over sixty miles in diameter now and still growing fast. It lay sprawled over the Adirondack Mountains, completely blanketing everything from Saranac Lake to Port Henry, with one edge of it over Westport, in Lake Champlain.

Everyone within two hundred miles of the leech was evacuated.

General O'Donnell was given permission to use hydrogen bombs, contingent on the approval of his scientists.

"What have the bright boys decided?" O'Donnell wanted to know.

He and Micheals were in the living room of an evacuated Schroon Lake house. O'Donnell had made it his new command post.

"Why are they hedging?" O'Donnell demanded impatiently. "The leech has to be blown up quick. What are they fooling around for?"

"They're afraid of a chain reaction," Micheals told him. "A concentration of hydrogen bombs might set one up in the Earth's crust or in the atmosphere. It might do any of half a dozen things."

"Perhaps they'd like me to order a bayonet attack," O'Donnell said contemptuously.

Micheals sighed and sat down in an armchair. He was convinced that the whole method was wrong. The government scientists were being rushed into a single line of inquiry. The pressure on them was so great that they didn't have a chance to consider any other approach but force--and the leech thrived on that.

Micheals was certain that there were times when fighting fire with fire was not applicable.

Fire. Loki, god of fire. And of trickery. No, there was no answer there. But Micheals' mind was in mythology now, retreating from the unbearable present.

Allenson came in, followed by six other men.

"Well," Allenson said, "there's a damned good chance of splitting the Earth wide open if you use the number of bombs our figures show you need."

"You have to take chances in war," O'Donnell replied bluntly. "Shall I go ahead?"

Micheals saw, suddenly, that O'Donnell didn't care if he did crack the Earth. The red-faced general only knew that he was going to set off the greatest explosion ever produced by the hand of Man.

"Not so fast," Allenson said. "I'll let the others speak for themselves."

The general contained himself with difficulty. "Remember," he said, "according to your own figures, the leech is growing at the rate of twenty feet an hour."

"And speeding up," Allenson added. "But this isn't a decision to be made in haste."

Micheals found his mind wandering again, to the lightning bolts of Zeus. That was what they needed. Or the strength of Hercules.

Or--

He sat up suddenly. "Gentlemen, I believe I can offer you a possible alternative, although it's a very dim one."

They stared at him.

"Have you ever heard of Antaeus?" he asked.

* * * * *

The more the leech ate, the faster it grew and the hungrier it became.

Although its birth was forgotten, it did remember a long way back. It had eaten a planet in that ancient past. Grown tremendous, ravenous, it had made the journey to a nearby star and eaten that, replenishing the cells converted into energy for the trip. But then there was no more food, and the next star was an enormous distance away.

It set out on the journey, but long before it reached the food, its energy ran out. Mass, converted back to energy to make the trip, was used up. It shrank.

Finally, all the energy was gone. It was a spore, drifting aimlessly, lifelessly, in space.

That was the first time. Or was it? It thought it could remember back to a distant, misty time when the Universe was evenly covered with stars. It had eaten through them, cutting away whole sections, growing, swelling. And the stars had swung off in terror, forming galaxies and constellations.

Or was that a dream?

Methodically, it fed on the Earth, wondering where the rich food was. And then it was back again, but this time above the leech.

It waited, but the tantalizing food remained out of reach. It was able to sense how rich and pure the food was.

Why didn't it fall?

For a long time the leech waited, but the food stayed out of reach. At last, it lifted and followed.

The food retreated, up, up from the surface of the planet. The leech went after as quickly as its bulk would allow.

The rich food fled out, into space, and the leech followed. Beyond, it could sense an even richer source.

The hot, wonderful food of a sun!

* * * * *

O'Donnell served champagne for the scientists in the control room. Official dinners would follow, but this was the victory celebration.

"A toast," the general said, standing. The men raised their glasses. The only man not drinking was a lieutenant, sitting in front of the control board that guided the drone spaceship.

"To Micheals, for thinking of--what was it again, Micheals?"

"Antaeus." Micheals had been drinking champagne steadily, but he didn't feel elated. Antaeus, born of Ge, the Earth, and Poseidon, the Sea. The invincible wrestler. Each time Hercules threw him to the ground, he arose refreshed.

Until Hercules held him in the air.

Moriarty was muttering to himself, figuring with slide rule, pencil and paper. Allenson was drinking, but he didn't look too happy about it.

"Come on, you birds of evil omen," O'Donnell said, pouring more champagne. "Figure it out later. Right now, drink." He turned to the operator. "How's it going?"

Micheals' analogy had been applied to a spaceship. The ship, operated by remote control, was filled with pure radioactives. It hovered over the leech until, rising to the bait, it had followed. Antaeus had left his mother, the Earth, and was losing his strength in the air. The operator was allowing the spaceship to run fast enough to keep out of the leech's grasp, but close enough to keep it coming.

The spaceship and the leech were on a collision course with the Sun.

"Fine, sir," the operator said. "It's inside the orbit of Mercury now."

"Men," the general said, "I swore to destroy that thing. This isn't exactly the way I wanted to do it. I figured on a more personal way. But the important thing is the destruction. You will all witness it. Destruction is at times a sacred mission. This is such a time. Men, I feel wonderful."

"Turn the spaceship!" It was Moriarty who had spoken. His face was white. "Turn the damned thing!"

He shoved his figures at them.

They were easy to read. The growth-rate of the leech. The energy-consumption rate, estimated. Its speed in space, a constant. The energy it would receive from the Sun as it approached, an exponential curve. Its energy-absorption rate, figured in terms of growth, expressed as a hyped-up discontinuous progression.

The result--

"It'll consume the Sun," Moriarty said, very quietly.

The control room turned into a bedlam. Six of them tried to explain it to O'Donnell at the same time. Then Moriarty tried, and finally Allenson.

"Its rate of growth is so great and its speed so slow--and it will get so much energy--that the leech will be able to consume the Sun by the time it gets there. Or, at least, to live off it until it can consume it."

O'Donnell didn't bother to understand. He turned to the operator.

"Turn it," he said.

They all hovered over the radar screen, waiting.

* * * * *

The food turned out of the leech's path and streaked away. Ahead was a tremendous source, but still a long way off. The leech hesitated.

Its cells, recklessly expending energy, shouted for a decision. The food slowed, tantalizingly near.

The closer source or the greater?

The leech's body wanted food _now_.

It started after it, away from the Sun.

The Sun would come next.

* * * * *

"Pull it out at right angles to the plane of the Solar System," Allenson said.

The operator touched the controls. On the radar screen, they saw a blob pursuing a dot. It had turned.

Relief washed over them. It had been close!

"In what portion of the sky would the leech be?" O'Donnell asked, his face expressionless.

"Come outside; I believe I can show you," an astronomer said. They walked to the door. "Somewhere in that section," the astronomer said, pointing.

"Fine. All right, Soldier," O'Donnell told the operator. "Carry out your orders."

The scientists gasped in unison. The operator manipulated the controls and the blob began to overtake the dot. Micheals started across the room.

"Stop," the general said, and his strong, commanding voice stopped Micheals. "I know what I'm doing. I had that ship especially built."

The blob overtook the dot on the radar screen.

"I told you this was a personal matter," O'Donnell said. "I swore to destroy that leech. We can never have any security while it lives." He smiled. "Shall we look at the sky?"

The general strolled to the door, followed by the scientists.

"Push the button, Soldier!"

The operator did. For a moment, nothing happened. Then the sky lit up!

A bright star hung in space. Its brilliance filled the night, grew, and started to fade.

"What did you do?" Micheals gasped.

"That rocket was built around a hydrogen bomb," O'Donnell said, his strong face triumphant. "I set it off at the contact moment." He called

to the operator again. "Is there anything showing on the radar?"

"Not a speck, sir."

"Men," the general said, "I have met the enemy and he is mine. Let's have some more champagne."

But Micheals found that he was suddenly ill.

* * * * *

It had been shrinking from the expenditure of energy, when the great explosion came. No thought of containing it. The leech's cells held for the barest fraction of a second, and then spontaneously overloaded.

The leech was smashed, broken up, destroyed. It was split into a thousand particles, and the particles were split a million times more.

The particles were thrown out on the wave front of the explosion, and they split further, spontaneously.

Into spores.

The spores closed into dry, hard, seemingly lifeless specks of dust, billions of them, scattered, drifting. Unconscious, they floated in the emptiness of space.

Billions of them, waiting to be fed.

--PHILLIPS BARBEE

Transcriber's Note:

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